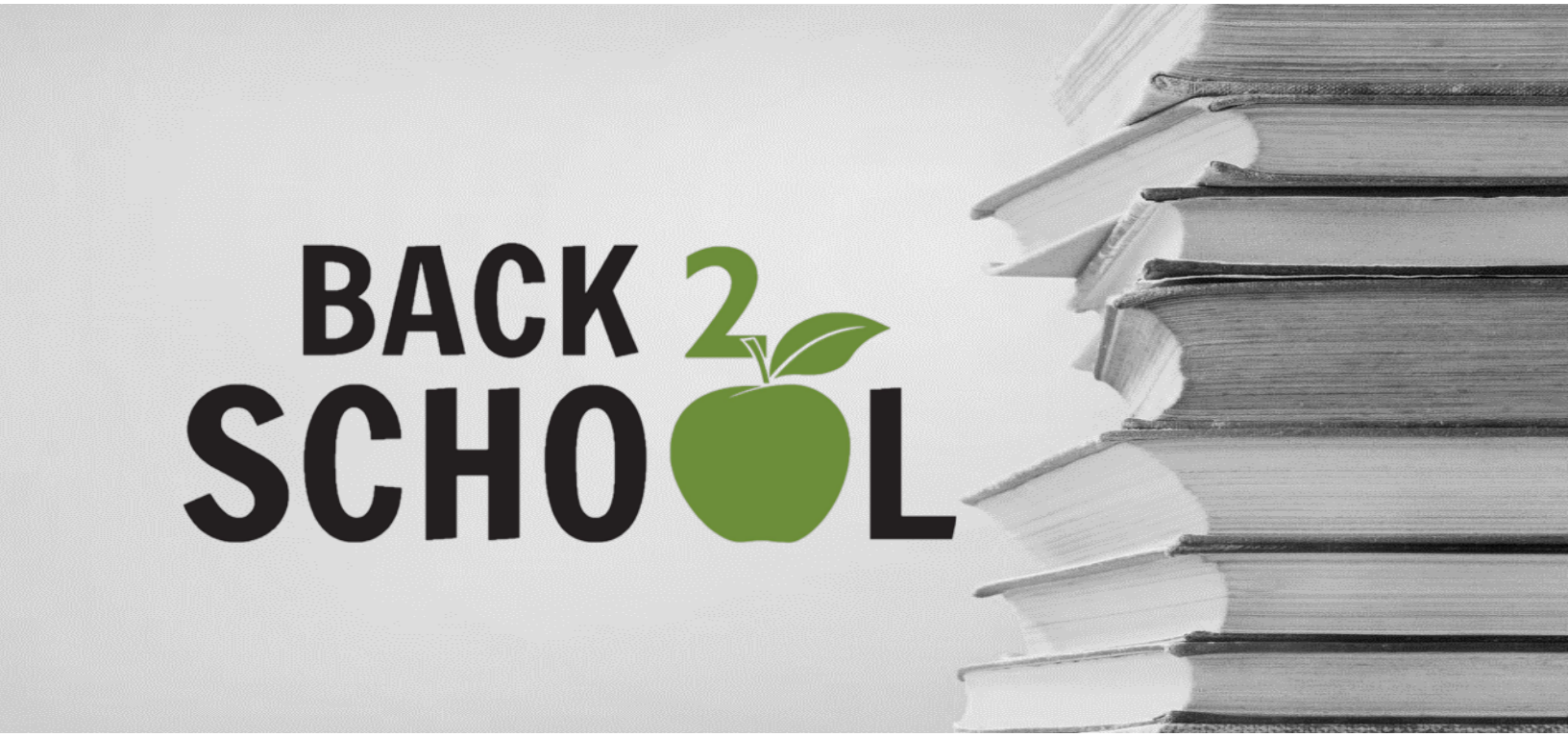

Ph.D. dissertation

The Back2School Project

Introducing Transdiagnostic Cognitive Behavioral Therapy for youths with School Attendance Problems

Daniel Bach Johnsen

Department of Psychology and Behavioral Sciences

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Aarhus University

July 2020

CEBU - CENTRE FOR THE PSYCHOLOGICAL TREATMENT OF CHILDREN AND ADOLESCENTS
DEPARTMENT OF PSYCHOLOGY AND BEHAVIOURAL SCIENCES
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Papers included in the dissertation

Paper 1

Lomholt, J. J., Johnsen, D. B., Silverman, W. K., Heyne, D., Jeppesen, P., & Thastum, M. (2020). Feasibility Study of Back2School, a Modular Cognitive Behavioral Intervention for Youth with School Attendance Problems. Frontiers in Psychology, 11(April), 1–15.

Paper 2

Thastum, M., Johnsen, D. B., Silverman, W. K., Jeppesen, P., Heyne, D., & Lomholt, J. J. (2019). The Back2School modular cognitive behavioral intervention for youths with problematic school absenteeism : study protocol for a randomized controlled trial, 1–12. Trials.

Paper 3

Johnsen, D. B., Lomholt, J. J., Heyne, D., Jeppesen, P., Jensen, M. B., Silverman, W. K., & Thastum, M. (2020). Who misses school? Sociodemographic and clinical characteristics of Danish youths with school attendance problems. Scandinavian Journal of Educational Research (In review).

Paper 4

Johnsen, D. B., Lomholt, J. J., Heyne, D., Jensen, M. B., Jeppesen, P., Silverman, W. K., & Thastum, M. (2020). The effectiveness of modular transdiagnostic cognitive behavioral therapy versus treatment as usual for youths with school attendance problems: A randomized controlled trial (Draft).

Additional papers conducted during the Ph.D.

Gallé-Tessonneau, M., Johnsen, D. B., & Keppens, G. (2019). The relationship between mental health and school absenteeism in a community sample of French secondary school students: four profiles derived from cluster analysis. *European Journal of Education and Psychology*, *12*(1), 77.

Heyne, D., Gentle-Genitty, C., Gren Landell, M., Melvin, G., Chu, B., Gallé-Tessonneau, M., Askeland, K. G., Gonzálvez, C., Havik, T., Ingul, J. M., Johnsen, D. B., et al. (2019). Improving school attendance by enhancing communication among stakeholders: establishment of the International Network for School Attendance (INSA). *European Child & Adolescent Psychiatry*, (0123456789). Springer Berlin Heidelberg.

Johnsen, D. B., Arendt, K., & Thastum, M. (2019). The efficacy of manualized Cognitive Behavior Therapy conducted by student-therapists treating Danish youths with anxiety using a benchmark comparison. *Scandinavian Journal of Child and Adolescent Psychiatry and Psychology*, *7*(8), 68–80

List of abbreviations

SAP	School Attendance Problems
B2S	Back2School
MMM	Mind My Mind
SR	School Refusal
TR	Truancy
SW	School Withdrawal
SE	School Exclusion
CEBU	Centre for the Psychological Treatment of Children and Adolescents
CBT	Cognitive Behavioral Therapy
MMT-CBT	Manualized modular transdiagnostic cognitive behavioral therapy
TAU	Treatment as usual
RCT	Randomized Controlled Trial
M	Mean
SD	Standard Deviation
d	Cohen's *d*: Effect size
MLM	Multilevel Modelling
B2S	Back2School
SCAS	Spence Children's Anxiety Scale
SDQ	Strengths and Difficulties Questionnaire
MFQ	Mood and Feelings Questionnaire
SEQ-SS	Self-Efficacy Questionnaire for School Situations
SEQ-RSAP	Self-Efficacy Questionnaire responding to School Attendance Problems
CHU-9D	Child Health Utility 9D Index
ESQ	Evaluation of Treatment Satisfaction Questionnaire

English summary

This dissertation addresses the treatment of school attendance problems (SAPs) among school-aged youths. It includes four articles pertaining to the sociodemographic characteristics of youths with SAPs, and the evaluation of a new treatment, Back2School (B2S), aimed to treat SAPs and coinciding mental health problems.

Paper 1. Presents the first test of the B2S treatment, a new manual-based, modular transdiagnostic CBT intervention (MMT-CBT) to increase school attendance, and reduce mental health problems among youth with SAPs. B2S also aims to increase the self-efficacy of these youth and their parents. The B2S treatment includes evidence-based modules addressing youth anxiety, depression, and behavior problems, together with modules focused on parent guidance and school consultation. The current study examined the feasibility of evaluating B2S in a randomized controlled trial and acceptability of the B2S program in a non-randomized trial, including both qualitative and quantitative data, in preparation for a randomized controlled trial of its effectiveness. Twenty-four youth with a SAP and their parents were recruited from primary and lower secondary schools in Aarhus Municipality, Denmark. Parents and youths rated their satisfaction with B2S as high, and high levels of satisfaction were maintained one year after the intervention. Preliminary evaluation of intervention outcomes showed a significant increase in school attendance and decreases in psychological symptoms, as well as a significant increase in self-efficacy for both youth and parents. Based on this feasibility data, adaptations were made to the B2S manual and study procedures before the commencement of the RCT study (**Paper 4**).

Paper 2. Consists of the registered protocol for the B2S RCT study (**Paper 4)**. The protocol describes the RCT research design for evaluating the effectiveness of the B2S treatment, relative to a comparator control arm TAU. One hundred sixty children, aged 7 to 16 years, will be randomly assigned to either B2S or TAU. The design is a two (B2S and TAU) by four (pre-assessment [pre], post-assessment [post], and 3-month [3-FU] and 12-month [12-FU] assessments) mixed between-within design. The primary outcome measures will consist of school attendance measured in days (i.e., registry data) and hours (i.e., parent-reported).

Secondary outcomes pertain to youth psychosocial functioning, and self- efficacy collected via youth and parent reports.

Paper 3. Presents the baseline characteristics of the youths and parents included in the RCT study (Paper 4). The study examined the school absence, absence categories (i.e., absence due to illness, excused, non-excused), sociodemographic characteristics, and mental health problems among 152 help-seeking youths with SAPs (i.e., >10% absenteeism). Older youths, youths with mental health problems, and youths whose parents had mental health problems exhibited higher levels of absence. Lower levels of non-excused absence were found among youths with highly educated fathers, and youths living with both parents. Many youths had clinical levels of anxiety, depression, or 'emotional and behavioral difficulties'. The study highlights the need for early intervention, addressing a broad range of mental health problem

Paper 4. This study aimed to evaluate the effectiveness of a MMT-CBT treatment for SAPs (B2S), compared against TAU, using an RCT design. A sample of 152 youths (n = 92 males) between 6 and 16 years of age (M = 12.15 years, SD = 2.16) with SAPs and their parents were randomized to B2S (n = 74) or TAU (n = 78). The B2S intervention was designed to increase youths' school attendance and reduce symptoms of mental health problems and was used together with a transdiagnostic CBT manual (Mind My Mind). TAU interventions consisted of both public and private treatment services. Significant improvement in youth school attendance was found in both treatment groups. Time (i.e., Pre, Post, 3-Month Follow-Up) × group (i.e., B2S, TAU) analyses yielded no significant between-group differences between the B2S and TAU conditions for change in youths' school attendance. Significant between-group differences were found between the two interventions in favor of the B2S condition in the change in emotional problems, conduct problems, problems with peers, interference of problems, and youth and parent self-efficacy related to dealing with a SAP. The present study presents the first evaluation of the effectiveness of a transdiagnostic CBT outpatient treatment for youths with SAPs, showing positive benefits for the treatment. However, given the non-significant between-group difference related to an increase in school attendance, future studies should focus on a delineation of the factors with predictive value for successful treatment outcomes in CBT treatment for youths with SAPs.

Norsk sammendrag

Denne avhandlingen tar for seg behandlingen av skolefraværsproblemer (engelsk forkortelse : *SAPs*) blant barn og unge (herfra omtalt som *unge*). Avhandlingen inkluderer fire artikler som omhandler de sosiodemografiske karakteristikkene til unge med SAP, og den første evalueringen av en ny behandling, Back2School (B2S), som er ment å behandle SAPs og sammenfallende psykiske problemer.

Artikkel 1. Presenterer den første undersøkelsen av B2S-programmet, en ny manual-basert, modulær transdiagnostisk kognitiv adferds terapeutisk (MMT-CBT) intervensjon, utviklet for å øke skoledeltakelsen og redusere mentale helbredsproblemer blant unge med SAPs. En videre har B2S som mål å øke de unge og deres foreldres self-efficacy i forhold til SAPs. B2S inkluderer evidensbaserte behandlingsmoduler som adresserer angst, depresjon og adferdsproblemer, sammen med behandlingsmoduler som fokuserer på foreldreveiledning og skolekonsultasjon. Studiet undersøkte muligheten for å evaluere B2S i en randomisert kontrollert studie (RCT), og akseptabiliteten av B2S-programmet i en ikke-randomisert studie. Studiet inkluderte både kvalitative og kvantitative data, som ble brukt til å forberede RCT studiet som omhandler programmets effektivitet (Artikkel 4). Totalt ble 24 unge med SAPs og foreldrene deres, rekruttert fra barneskoler i Aarhus kommune, Danmark. Foreldre og de unge vurderte deres tilfredshet med B2S som høy, og de høye tilfredshetsnivåene ble opprettholdt ett år etter intervensjonen. Den foreløpige evaluering av B2S-programmet viste en signifikant økning i de unges skoledeltakelse og reduksjon i deres psykologiske symptomer, samt en betydelig økning i både de unge og foreldrenes self-efficacy. Basert på resultatene ble det gjort tilpasninger til B2S-programmet og prosedyrene for RCT studiet.

Artikkel 2. Beskriver studieprotokollen for utprøvningen av B2S-programmet i et RCT studie (Artikkel 4). Protokollen beskriver forskningsdesignet for å evaluere effektiviteten av en B2S-behandling, i forhold til en kontrollgruppe (TAU). Totalt skal 160 unge, i alderen 7 til 16 år, bli tilfeldig fordelt til enten B2S eller TAU. Designet følger en to (B2S og TAU) ganger fire (pre evaluering [pre], post evaluering [post], og 3-måneders [3-FU] og 12-måneder [12-FU] evaluering) mixed between-within design. De primære

resultatmålene består av skoledeltagelse målt i dager (dvs. registerdata) og timer (dvs. foreldrerapportert).

Artikkel 3. Presenterer en beskrivelse av de unge og deres foreldrene som er inkludert i RCT-studien (Artikkel 4). Studien undersøkte skolefraværet, fraværskategoriene (dvs. fravær på grunn av sykdom, lovlig fravær, ikke-lovlig fravær), sosiodemografiske karakteristikker og psykiske helbredsproblemer blant 152 hjelpesøkende unge med SAPs (dvs.> 10% skolefravær). Eldre unge, unge med psykiske helbredsproblemer, og unge med foreldre med psykiske helbredsproblemer, hadde et høyere fraværsnivå. Lavere nivåer av ikke-lovlig fravær ble funnet blant unge med høyt utdannede fedre, og unge som bodde hos begge foreldrene. Mange unge hadde kliniske nivåer av angst, depresjon eller 'emosjonelle og atferdsvansker'. Resultatene belyser behovet for tidlig intervensjon, og omfatter et bredt spekter av psykisk helbredsproblemer blant unge.

Artikkel 4. Studien hadde som mål å evaluere effektiviteten til B2S-programmet i å behandle SAPs, sammenlignet med TAU, ved bruk av et RCT-design. Et utvalg av 152 unge (n = 92 gutter) mellom 6 og 16 år (M = 12.15 år, SD = 2.16) med SAPs og foreldrene deres ble randomisert til B2S (n = 74) eller TAU (n = 78). B2S-programmet ble designet for å øke ungdommenes skoledeltakelse og redusere symptomer på psykiske problemer og ble brukt sammen med en transdiagnostisk CBT-manual (Mind My Mind). TAU intervensjonene besto av både offentlige og private behandlingstjenester. En betydelig forbedring i skoledeltakelsen ble funnet i begge behandlingsgruppene. Tid (dvs. Pre, Post, 3-måneders oppfølging) × gruppe (dvs. B2S, TAU) -analyser viste ingen signifikante forskjeller mellom B2S og TAU gruppene i forhold til endring i de unges skoledeltakelse. Det ble funnet signifikante forskjeller mellom gruppene til fordel for B2S-programmet i endringer i emosjonelle problemer, adferdsproblemer, problemer med jevnaldrende, forstyrrelse av problemer, og self-efficacy blant de unge og deres foreldres evne til å håndtere SAPs. Det aktuelle studiet presenterer den første evalueringen av effektiviteten til en transdiagnostisk CBT behandling for unge med SAP, og viser positive fordeler for behandlingen. Gitt den ikke-signifikante forskjellen mellom grupper relatert til økningen i skoledeltakelse, bør fremtidige studier sette søkelys på å identifisere faktorene med prediktiv verdi for vellykkede behandlingsresultater i CBT-behandling for ungdommer med SAP.

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Preface

School is an important developmental arena for youths, where they learn and develop their academic and social skills. Missing school is a potential threat to this development, and for some youths, the amount of missed school might become problematic and harmful for their healthy development. In Denmark, missing 10% or more of school is considered harmful for youths, and in the previous academic year, 14.2% of all Danish public school students had absence above this threshold (Danish Ministry of Education, 2019). High levels of school absence have been linked to several personal detrimental outcomes, such as poorer educational achievement (Gottfried, 2014), higher rates of school dropout (Gubbels, van der Put, & Assink, 2019), and future unemployment (Attwood & Croll, 2006). High levels of school absence have also been associated with a range of different mental health problems, such as anxiety, depression, and behavioral problems. (Egger, Costello, & Angold, 2003; McShane, Walter, & Rey, 2001; Walter et al., 2010).

The high prevalence of youths with problematic school absence coupled with the associated adverse outcomes, calls for interventions that effectively increase school attendance, and alleviate the youths presenting symptoms of mental health problems. Treatment studies testing different approaches of cognitive behavioral therapy (CBT) have shown positive outcomes in treating youths with school attendance problems (SAPs) related to internalizing problems such as anxiety and depression (Heyne et al., 2002; King et al., 1998; Last, Hansen, & Franco, 1998; Melvin et al., 2016). However, the comorbid nature of mental health problems among youths with SAPs suggests that there is a need for treatments that encompass a range of different mental health problems (e.g., anxiety, depression, and behavioral problems). Advances have been made, and CBT approaches designed to incorporate treatment for a range of different mental health problems. Such CBT approaches have been tested in psychiatric hospital settings, achieving promising results related to an increase in youths' school attendance and a reduction in their mental health problems. (Hannan, Davis, Morrison, Gueorguieva, & Tolin, 2019; Reissner et al., 2015; Walter et al., 2010). Although the youths improved their school attendance following treatment, a considerable number of youths did not achieve regular school attendance following treatment, and most evaluations did not compare treatment effects with a control group. Only Reissner et al. (2015)

tested their treatment in a randomized controlled trial (RCT), comparing their manualized multimodal SAPs treatment against treatment as usual (TAU) provided by psychiatrists in private practice. They showed that their multimodal treatment was more effective in reducing symptoms of mental health problems (i.e., symptoms of depression), but found no significant benefit in increasing school attendance compared to the TAU. They suggested that future treatment of youth with SAPs should be tested in an outpatient setting, possibly increasing treatment effectiveness and reducing treatment costs (Reissner et al., 2015). To sum up, the presented findings highlight that there is a need for more effective treatments for SAPs among youths. The present dissertation aims to build on the current literature, by increasing our current knowledge relating to youths with SAPs and by testing a newly developed modular transdiagnostic CBT treatment for youths with SAPs, called Back2School, in an outpatient setting using an RCT design.

The current dissertation includes four papers, which all originate from the Back2School project. The project is an extensive treatment study project with the primary aim of developing and testing the Back2School treatment in helping youths with SAPs to increase their school attendance. The first paper (Paper 1: Lomholt et al., 2020) describes a pilot study conducted to test the feasibility of the Back2School program. The second paper (Paper 2: Thastum et al., 2019) presents the study protocol designed in preparation for the RCT study. The third paper (Paper 3: Johnsen et al., 2020a) presents a descriptive study of the characteristic of a large sample of Danish youths with SAPs. The fourth and final paper (*Paper 4*) shows the results of the RCT study, which evaluates the effectiveness of the Back2School program, compared to treatment as usual (TAU).

Before considering these four papers in detail, the overall theoretical background for the Back2School project is presented. Followed by the overall methods, procedures, and measures used in the included papers are outlined. Furthermore, the specific aims and results from each of the four papers are presented. Finally, the dissertation presents the overall clinical implications and conclusion of the findings.

1. Introduction

Most youths miss a couple of school days throughout their schooling, without severe detrimental consequences. However, as a couple of days quickly adds up to more extended periods of missed education, some youths' non-attendance might become disruptive and harmful and develop into a *school attendance problem* (SAP). Take, for example, a Danish primary school student missing one day of school, every two weeks, throughout primary school. That student would miss approximately 10% of school every year, and by the end of primary school, that student would have lost a full academic school year[1]. Although this might seem like an unlikely scenario for most students, a large proportion (14.2%) of students in Danish public schools missed 10% or more of the previous academic year (Danish Ministry of Education, 2019). Similar rates of have also been reported in the UK, USA, and Australia, where the proportion of youths missing 10% or more of the school year, range from 11 to 25% (Anglophone School District South, 2019; Department for Education, 2019a; U.S. Department of Education, 2019). These reports show that missing school is a prevalent problem among youths, both in Denmark and around the world.

Several negative outcomes have been associated with SAPs, both on a personal and societal level (Alliance for Excellent Education, 2011; Garcia & Weiss, 2018; Gubbels et al., 2019). Youths with SAPs are more likely to struggle academically (Gottfried, 2014), give up on education prematurely (Balfanz, Herzog, & Mac Iver, 2007), and face unemployment later on in life (Attwood & Croll, 2006). SAPs among youths have been associated with a negative school climate (Van Eck, Johnson, Bettencourt, & Johnson, 2017), and youths with SAPs have shown to negatively affect the school attendance of their classmates (Gottfried, 2011). Youths with SAPs have been associated with an increase in health risk behaviors (Eaton, Brener, & Kann, 2008), lower health-related quality of life (Van Den Toren et al., 2019), and a wide range of mental health problems (Egger et al., 2003; McShane et al., 2001; Munkhaugen et al., 2017).

[1] The academic year in Denmark consists of 200 school days. Missing one day bi-weekly (1/10 school days), equals 20 missed school days in an academic year. Missing 20 days of school each year, throughout Danish primary school (10 years), equals missing a full academic year (20 x 10 = 200 school days).

Previous research has recognized the high prevalence and negative outcomes related to SAPs, advocating for both early detection and intervention targeting SAPs among youths (Chu, Guarino, Mele, Connell, & Coto, 2018; Ingul, Havik, & Heyne, 2019; Kearney & Graczyk, 2014). However, to successfully detect and implement early interventions for SAPs, a clear conceptualizing and definition of what is considered a SAP need to be established.

1.1. School Attendance Problems

To detect and develop effective interventions targeting SAPs, we require a clear definition and conceptualization of what is considered problematic school non-attendance. However, the conceptualization of SAPs has been challenging, as professionals have been confronted with various and changing conceptualizations of SAPs in the previous century (Heyne, Gren-Landell, Melvin, & Gentle-Genitty, 2019; Hiatt, 1915). This disparity in the fundamental conceptualizations of SAPs is partially due to different sets of professionals addressing SAPs, such as psychologists, social workers, teachers, and physicians (Kearney, 2003). However, several recent contributions within the literature on SAPs have moved the field towards "bridging the gap" between different professional and creating a more unified consensus relating to the definition, assessment, and treatment of SAPs (Heyne, Gentle-Genitty, et al., 2019; Heyne, Gren-Landell, et al., 2019; Ingul et al., 2019; Kearney & Graczyk, 2020). The following sections will outline a definition of SAPs, as well as a description of different sub-types of SAPs.

1.1.1. Problematic vs. Non-problematic

School attendance problems (SAPs) is a collective term that includes different types of absence, which are regarded as problematic because of the duration and frequency of school absence or difficulty attending school (Heyne et al., 2019). Thus, one of the critical aspects of defining a SAP is to distinguish it from *non-problematic* school absence. Kearney (2003) proposed an influential definition of *non-problematic* absence as short- and long-term absence that is "agreed on by parents and school officials as legitimate in nature and not involving detriment to the child" (p. 59). He defined SAPs among youths (i.e., *problematic school absence*) as "School-aged youths who (a) have missed most (i.e., >50%) school time for at least two weeks and/or (b) experience difficulty attending school for at least two weeks such that significant interference occurs in the child's or the family's daily life routine" (p. 59) (Kearney, 2003).

Kearney has since updated his definition, lowering criterion (a) to 25%, and adding a third criterion "(c) and/or are absent for at least ten days of school during any 15-week period while school is in session" (p. 265) (Kearney, 2008). This definition encompasses diverse patterns and types of school absence and is one of the most well-known definitions of SAPs.

Although Kearney's definition of SAPs is widely recognized, several other cut-offs for what is problematic school absence have been applied and suggested in the literature. These cut-offs are varying both in the time period measured (e.g., two weeks, or three months) and the thresholds used (e.g., 10% school absence or 25 % absence). Although no study has been able to show the validity of a specific cut-off point (Heyne et al., 2019), researchers and legislators often refer to 10% school absence across the school year as problematic (Anglophone School District South, 2019; Balfanz & Byrnes, 2012; Danish Ministry of Children and Education, 2019; Department for Education, 2019b).

1.1.2. The problem with thresholds

Using a specific threshold or cut-off criterion to define the presence of SAPs holds communicative value, as it aids professionals in detecting and acting upon SAPs among youths. However, researchers have also identified some limitations related to the use of pre-defined cut-offs to define SAPs (Gottfried & Hutt, 2019; Hancock, Shepherd, Lawrence, & Zubrick, 2013). For example, Kearney's criterion has been criticized for being too conservative, creating a risk of identifying and intervening for SAPs too late (Gallé-Tessonneau, Johnsen, & Keppens, 2019). A study by Hancock and colleagues (2013) found that every day missed from school had a negative impact on the youth's academic achievement and that youths' absenteeism accumulated over time. Their study highlight that there is no 'safe threshold' for what amounts to harmful or problematic school absence. Kearney has since highlighted the importance of avoiding a 'wait-to-fail' approach to SAPs as even a small amount of absences are linked to more severe problems (Henry, 2007; Henry & Huizinga, 2007; Kearney & Graczyk, 2014, 2020). These findings show that "every day counts" and that schools and other policymakers should be cautious when using pre-defined cut-offs to define SAPs.

1.1.3. Measuring and detecting school attendance problems

Youths with SAPs have predominantly been identified based on measures of school attendance. However, instruments and procedures used to measure school attendance that defines SAPs differ between studies (Gottfried, 2014; Heyne et al., 2019). The assessment of school attendance differs related to, who provides the school absence data (e.g., parent reports, school staff who keep attendance records), what is measured (e.g., how many full days of school are missed, missed classes), and within which period it is estimated (e.g., absence in the previous three months or last two weeks). For instance, Havik et al. (2015) measured school absence using a single self-report item, assessing the number of full school days missed in the last three months. Eaton et al. (2008) used two self-report items to measure missed classes or school days in the previous 30 days of school. Gallé-Tessonneau et al. (2019) used two separate measures of absences 'at school' and 'from school' in the last three weeks, were absences at school (e.g., visit at the school office or school infirmary) was reported by the youths. The absence from school was gathered from attendance records provided by the school. These different methods for measuring school absence makes it difficult to compare findings across studies.

It is common for researchers to make use of self-reported absenteeism. Still, this method might be inaccurate when youth are asked to recall absence over more extended periods (Stone, Bachrach, Jobe, Kurtzman, & Cain, 2000). Youths might also be biased in their reporting of school absence, as Keppens et al. (2019) found discrepancies between the number of non-excused school absences reported by the schools and the youths. They found that the schools reported approximately twice as many non-excused absences as the youths. The authors suggest that youths are biased to underreport unauthorized absences, as there may be negative consequences related to their non-excused absence (Keppens et al., 2019).

The use of school attendance registries is standard practice in schools within many countries. Researchers have used data from school attendance registries to identify youths with SAPs and assess their school absence (Askeland, Haugland, Stormark, Bøe, & Hysing, 2015; Hancock, Mitrou, Taylor, & Zubrick, 2018; Melvin et al., 2016). There have also been advances in developing systems to detect and identifying SAPs based on attendance registry data (Chu et al., 2018). However, attendance registry data

are not without bias, and research suggests that registry data underestimate the amount of absence taking place in schools as some types of absences go undetected or are falsely reported (Keppens et al., 2019). However, if more research was conducted using both school attendance registry data and self-reported data, discrepancies and biases could be discovered, possibly improving the registration procedures and the quality of the attendance data.

1.1.4. Sub-types of school attendance problems

As mentioned, the term SAPs is a collective term of problems attending school, which encompass different sub-types of SAPs. Following the identification of a SAP, further assessment of the type of SAP can be conducted based on the associated problem and function of the youths' school non-attendance. Four sub-types of SAPs have been suggested in the literature, namely *school refusal* (SR), *truancy* (TR), *school withdrawal* (SW), and *school exclusion* (SE) (Heyne, Gren-Landell, et al., 2019).

School Refusal (SR) has been defined as youths refusing to attend school in conjunction with emotional distress that is explained by an aversion to attending school (Heyne et al., 2019). The term SR was first introduced by Hersov (1960) and has often been referred to as school non-attendance that is due to coinciding internalizing problems such as anxiety and/or depressive disorders (Heyne, Sauter, Van Widenfelt, Vermeiren, & Westenberg, 2011a; Melvin et al., 2016). However, studies show that youths with SR might also present externalizing problems, such as conduct disorder or other behavioral problems (Egger et al., 2003; McShane et al., 2001). The definition of SR typically follows Berg's (1997) criteria, which have been refined by Heyne et al., (2019) and consist of four criteria. It is worth noting that, although the youth may present all four criteria, they might still attend school with high emotional distress:

> *"SR is said to occur when (1) a young person is reluctant or refuses to attend school, in conjunction with emotional distress that is temporal and indicative of aversion to attendance (e.g., excessive fearfulness, temper tantrums, unhappiness, unexplained physical symptoms) or emotional distress that is chronic and hindering attendance (e.g., depressive affect; sleep problems), usually but not necessarily manifest in absence (e.g., late arrivals; missing whole schooldays; missing consecutive weeks, months, or years), and (2) the young person does not try to hide associated absence from their parents (e.g., they are at home*

and the parents are aware of this), and if they previously hid absence then they stopped doing so once the absence was discovered; and (3) the young person does not display severe antisocial behavior, beyond resistance to parental attempts to get them to school; and (4) the parents have made reasonable efforts, currently or at an earlier stage in the history of the problem, to secure attendance at school, and/or the parents express their intention for their child to attend school full-time." Heyne et al., (2019).

Truancy (TR) typically occurs when youths are absent from school (e.g., the whole day or part of the day), without the permission of school authorities, and they typically try to hide their absence from their parents (Heyne et al., 2019). The associated problems related to TR are diverse and reflect an interplay between externalizing behavior and school disengagement (Vaughn, Maynard, Salas-Wright, Perron, & Abdon, 2013). Research has also shown that youths presenting truant behavior, might show symptoms of emotional problems like anxiety and depression (Egger et al., 2003). The definition of TR proposed by Heyne et al., (2019) consist of three criteria:

"TR is said to occur when: (1) a young person is absent from school for a whole day or part of the day, or they are at school but absent from the proper location (e.g., in the school-yard rather than in class); and (2) the absence occurs without the permission of school authorities; and (3) the young person typically tries to conceal the absence from their parents." Heyne et al., (2019).

School withdrawal (SW) is a type of SAPs influenced or motivated by parents (Heyne, Gren-Landell, et al., 2019). Several reasons for parent-motivated school non-attendance exist, ranging from reluctance towards sending their child to school (e.g., deliberately keeping their child at home), ambivalence related to managing attendance (e.g., laissez-faire; lack of interest in child's education), or the inability to get the child to attend school. Youth might also stay at home to look after a parent or siblings, or other circumstances like homelessness or drug abuse in the close family might prevent the youth from attending school. Thus there is a need for a definition that encompasses a broad range of parent motivated SAPs in the description of SW. Heyne et al., (2019) suggested the following two criteria:

"SW is said to occur when a young person's absence from school (e.g., late arrivals; missing whole school days; missing consecutive weeks, months, or years) is: (1) not concealed from the

parent(s); and (2) attributable to parental effort to keep the young person at home, or attributable to there being little or no parental effort to get the young person to school." Heyne et al., (2019).

School exclusion (SE) is a recently defined SAP type that can be defined as caused by the school, and was introduced by Heyne et al., (2019). SE has, to a lesser degree, been described in the literature. Still, there are examples of school practices that can be deemed as excluding youths from school, such as suspensions used disproportionately among minority groups (Raffaele Mendez, Knoff, & Mendez, 2003), and among youth with socio-economic disadvantages (Hemphill et al., 2010). It is important to note that Heyne et al., (2019) clarify that lawful expulsion falls outside the SE category. Although the use of suspensions is less common in Denmark and other Nordic countries, there are different ways schools might exclude youths from school. Such as not meeting their needs in terms of special education, psychical and mental handicaps, or socioemotional problems (Thastum, 2019). To create a definition of SE Heyne et al., (2019) proposed the following three criteria:

"SE is said to occur when a young person is absent from school or specific school activities, for any period of time, caused by the school: (1) employing disciplinary exclusion in an inappropriate manner (e.g., unlawful expulsion; internal suspension for the school's convenience). (2) Being unable or unwilling to accommodate the physical, social-emotional, behavioral, or academic needs of the young person (e.g., parents of a student with a mild intellectual disability are told to pick their daughter up two afternoons per week because her teaching aide will not be available). (3) Discouraging a young person from attending, beyond the realm of legally acceptable school policy (e.g., a youth who is struggling academically is asked to spend the day at home on the day that national academic assessments are undertaken)." Heyne et al., (2019).

Although there are clear distinctions between the mentioned types of SAPs, it is essential to note that they are not mutually exclusive. For example, youths with TR presenting truant behavior such as behavioral problems might also show symptoms of emotional problems like anxiety and depression which are more common among youths with SR (Egger et al., 2003; McShane et al., 2001). It might also be challenging to differentiate between SW and SR. For example, in cases where youth are presenting

high levels of anxiety related to attending school, parents might shield their child from experiencing anxiety and thus keep their child at home (Heyne, Gren-Landell, et al., 2019; Thastum, 2019). There might also be difficulties related to determining the presence of SW and SE. In cases of SAPs among youths, the relationship and collaboration between families and schools might be challenged or non-existent, and they might have different viewpoints if the SAP is parent motivated (SW) or school initiated (SE). Nonetheless, the differentiation and identification of different SAP sub-types are vital to providing informed and appropriate interventions, as differential psychosocial risk factors have been associated with different SAP sub-types (Maynard et al., 2018; Maynard, Mccrea, Pigott, & Kelly, 2013; Thastum, 2019).

The present dissertation will primarily use the collective term SAP to describe youths with problems attending school, and specific SAP types when appropriate. However, knowledge of different sub-types of SAPs is essential to understand the rationale for the Back2School program, which was to develop a treatment for all youths seeking help with SAP regardless of their presenting types of SAP. The current B2S treatment predominantly includes youths presenting with SR and TR as they, together with their parents, were seeking treatment for SAPs. But the studies might also include youths were parents have tried to keep them away from school (i.e., SW) or youth whose schools did not provide adequate support to their SAPs (i.e., SE).

1.2. SAPs and mental health

Mental health problems are ranked as some of the most impairing problems among youths (Whiteford et al., 2013), and it is estimated that 13.4% of youths worldwide present a mental health disorder (Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015). Several studies have found a strong link between SAPs and mental health problems (Finning, Ukoumunne, Ford, Danielson-Waters, et al., 2019; Finning, Ukoumunne, Ford, Danielsson-Waters, et al., 2019; Gubbels et al., 2019), and prevalence rates of mental health problem among youths with SAPs range from 24.5 to 88.2% (Egger et al., 2003; Nayak, Sangoi, & Nachane, 2018).

Youth mental health problems have been identified as an anteceding risk factor for the later development of SAPs. In a meta-analysis conducted by Gubbels et al., (2019), they showed that mental health problems (i.e., anxiety, depression, psychiatric symptoms/disorders, and antisocial behavior/cognitions) were significant risk factors for the development of SAPs and later school dropout. Furthermore, studies have also shown that youths who present with SAPs are significantly associated with symptoms of anxiety and depression (Finning, Ukoumunne, Ford, Danielson-Waters, et al., 2019a; Finning, Ukoumunne, Ford, Danielsson-Waters, et al., 2019b).

Mental health problems related to SAPs have often been examined among youths presenting with either SR or TR. SAPs defined as SR have been associated with emotional problems (e.g., anxiety and depression), while TR has been associated with behavioral disorders (e.g., conduct disorder and oppositional behavior disorders) (Maynard et al., 2016, 2017). However, in a study by Egger et al., (2003), they showed that there are considerable overlaps relating to the mental health problems among youths with SR and TR. They identified youths within a large community sample (*n* = 1.422) presenting with SR (*n* = 130), TR (*n* = 482), and a mix of TR and SR (*n* = 35) and assessed their presenting mental health problems. They showed that SR was associated with depression and separation anxiety, while TR was associated with oppositional defiant disorder, conduct disorder, and depression. Furthermore, they showed that youths with a mix of TR and SR presented a blend of coinciding emotional and behavioral disorders (Egger et al., 2003). Their findings showed that different types of SAPs (i.e., SR and TR) present with distinct but not mutually exclusive mental health problems. In light of their findings, Egger and colleagues (2003) suggested that future studies should examine treatment approaches that include youths with a mix of different types of SAPs.

A large body of research has previously described mental health problems among youths with SAPs within psychiatric and other treatment-seeking samples (Hannan et al., 2019; Heyne et al., 2002; Reissner et al., 2015; Walter et al., 2010). These studies show that the most prevalent disorders associated with SAPs are anxiety, depression, and behavioral disorders. In a study by McShane and colleagues (2001), they reported on the characteristics of youths presenting with SR, using detailed diagnostic information. They found high prevalence rates for anxiety disorders (28.0%), mood disorders

(30.0%), and disruptive behavior disorders (18.5%). They also found parental mental health problems reported among 53.0% of the youths' mothers and 34.0% of the fathers. Similar findings have been found in other psychiatric inpatient samples treating SAPs, were youths presented with anxiety, depressive, and behavioral disorders (Reissner et al., 2015; Walter et al., 2010).

The mentioned studies show that SAPs are related to mental health problems, and have suggested that I SAPs are left untreated, these problems could adversely affect the youths' social, emotional, and academic development (Nayak et al., 2018). The findings also suggest that many youths with SAPs could benefit from treatment and interventions that include elements targeting different mental health problems, especially symptoms of anxiety, depression, and behavioral problems. The high overlap of mental health problems among youths with SR and TR suggests that both could benefit from treatment targeting their mental health problems.

1.3. Interventions targeting SAPs

The heterogeneous and complex nature of youths with SAPs have led to several different interventions to increase school attendance. To navigate between these interventions and approaches, it can be helpful to arrange them based on the severity of the presenting SAPs and the intensity of the interventions targeting SAPs like the *Response to Intervention Model* (RtI) (Kearney & Graczyk, 2014). The RtI proposed a theoretical framework to promote and address SAPs and was developed to aid researchers, educators, and mental health professionals to focus on prevention and early interventions when working with SAPs. The RtI model suggested that the increasing severity of SAPs among youths should be matched with an equal increase in intervention intensity. The framework proposed an intervention pyramid (Figure 1) dividing intervention into three tiers of interventions, *Tier 1 (universal interventions for all youths)*, *Tier 2 (targeted interventions for at-risk youths)*, and *Tier 3 (Intensive interventions for chronically non-attending youths)*.

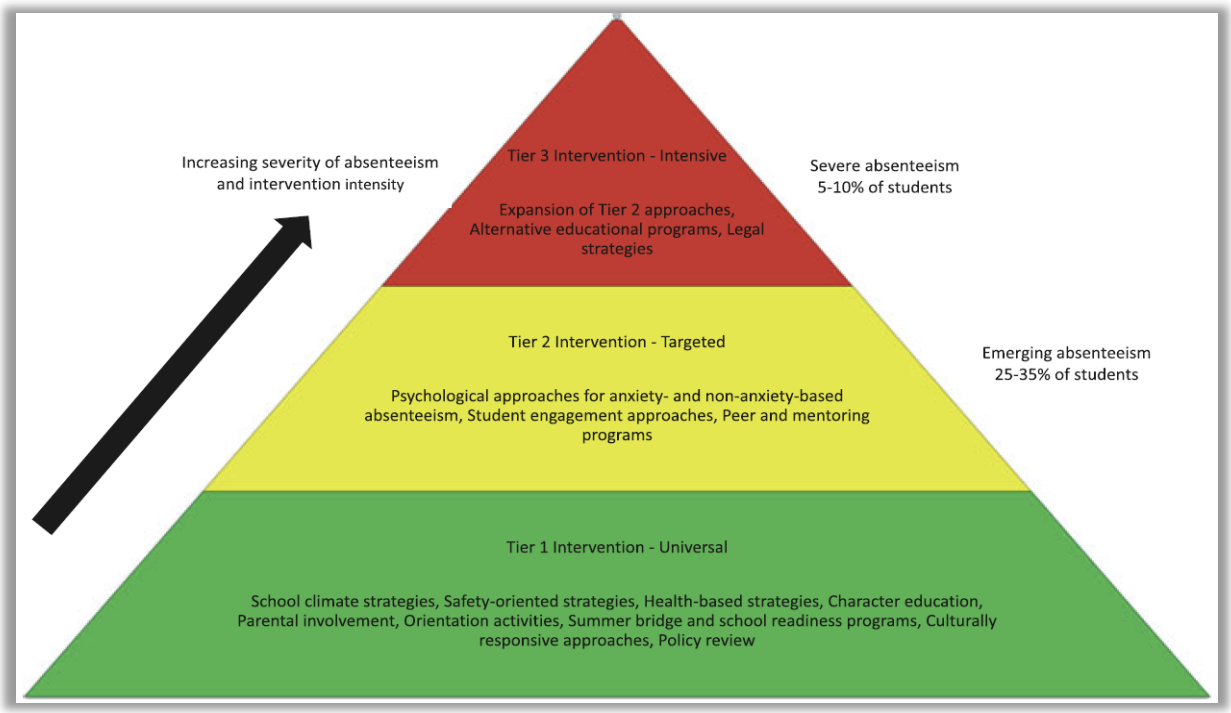


Figure 1. Response to Intervention model (Kearney & Graczyk, 2014)

Tier 1 interventions include school-wide and broad-based efforts to promote attendance and target all youths. Tier 1 interventions focusing the improvement of school climate (Bridgeland, DiIulio, John, & Morison, 2006), anti-bullying programs (Olweus & Limber, 2010), and mental health services (Hoagwood et al., 2007) are examples of universal intervention that can have a positive effect on youths school attendance. Another important intervention at this tier, is the screening and monitoring of school attendance (Chu et al., 2018), to identify youths who could benefit from Tier 1 interventions, or who might benefit from more intensive interventions in Tier 2 and 3 (Kearney & Graczyk, 2014, 2020).

Tier 2 approaches include targeted interventions for youths presenting with SAPs. These youths often present with emotional distress (SR) and behavioral problems (TR). Interventions in Tier 2 often include interventions and treatment initially developed in clinical settings, but which can be adapted to a school setting and school personnel (Heyne, Sauter, Van Widenfelt, Vermeiren, & Westenberg, 2011b; Mckay-Brown et al., 2019).

Tier 3 interventions can be viewed as an expansion of Tier 2 interventions, including more intensive and personalized interventions including functional assessment, mentoring, daily check-ins (Hannan et al., 2019; Reissner et al., 2015).

The current dissertation focuses on the development and examination of the Back2School program. The Back2School program was developed, building on previous SAP interventions from Tier 2 and 3. Therefore the following outline of interventions targeting SAPs will focus on treatments for youths with SAPs predominantly within Tier 2 and 3.

1.3.1. School refusal and truancy approaches

Several SAPs interventions have been developed and tested, targeting youths with either SR or TR (Maynard et al., 2016, 2013). TR interventions typically aim to increase school attendance by reducing truant behavior, and may involve interventions with the youth (e.g., mentoring), the parent/family (e.g., parent training), or the school/community (e.g., increasing school bonding) (Maynard, Kjellstrand, & Thompson, 2014; Mazerolle, Antrobus, Bennett, & Eggins, 2017; Snyder et al., 2010). SR interventions have predominantly consisted of cognitive behavioral therapy (CBT) targeting youths' SAPs and symptoms of emotional distress (e.g., symptoms of anxiety and/or depression), often involving, youths, parents and schools in treatment (Blagg & Yule, 1984; Heyne et al., 2002; King et al., 1998; Melvin et al., 2016).

Interventions targeting TR differ in modality and might be individually and family-focused (e.g., Maynard et al., 2014), community-based (e.g., Fantuzzo, Grim, & Hazan, 2005), or involve a combination of modalities such as the youth, family, schools and the community-focused (Snyder et al., 2010).

An individualized mentoring intervention called *Check & Connect*, have been evaluated in relation to attendance, behavior, and academic outcomes (Maynard et al., 2014). *Check* refers to systematically monitored student performance by assigned mentors, while *Connect* refers to mentors providing personalized, timely interventions to help students solve problems, build skills, and enhance competence. The study showed that the Check & Connect intervention did not present a significant

effect related to an increase in school attendance. However, youths showed significant improvements related to academic performance and reductions in disciplinary referrals.

Another school-wide TR intervention, called *The Positive Action program,* involve the student, their family, the school, and the community, and aims to improve school attendance, academic performance, and student behaviors by targeting social-emotional and character development (Snyder et al., 2010). *The Positive Action program* was evaluated in an RCT study conducted by Snyder et al., (2009), where the program was implemented in 20 schools and compared to 20 matched control schools. At a 1-year post-test, youths in schools implementing Positive Action program showed significantly higher academic performance, showed higher attendance rates, and fewer suspensions and retentions compared to the control schools.

The presented examples of TR interventions illustrated two different approaches that have been applied to reduce truant behavior (e.g., unexcused absence or absence without permission) by involving schools in the treatment. Interventions that aim to reduce school disengagement, by increasing school bonding (e.g., improving prosocial relationships with school personnel) have been found to hold a high positive impact related to reducing truant behavior (Keppens & Spruyt, 2020). Although both interventions reduced unwanted behaviors (e.g., retentions or disciplinary referrals), none of them specifically targeted mental health problems, which could have improved the benefits from the interventions.

Treatment for SR usually consists of different alterations of cognitive behavioral therapy (CBT). These CBT treatments typically targeted mental health problems that are common among youths with SR, such as symptoms of anxiety and depression (McShane et al., 2001; Walter et al., 2010). Treatment studies have tested different CBT approaches for treating SR, including parents and teacher training, as well as augmenting treatment with psychopharmacology (Heyne et al., 2002; Melvin et al., 2016).

In an RCT study by Heyne et al. (2002), they evaluated the effects of individualized CBT treatment for youths with SR, compared with youths receiving CBT plus parent/teacher training (CBT+PT), and youths receiving only parent/teacher training (PT). The CBT sessions involving only the youths' focused on

relaxation training, social skills training, cognitive therapy, and desensitization. Treatment sessions involving parents or teachers (i.e., CBT+PT and PT) focused on informing them about youths' training and strategies and encouraging them to support youths in using these strategies. Following treatment and at a later follow-up assessment, all groups (i.e., CBT, CBT+PT, and PT) showed significant within-group effects related to an increase in school attendance, and a reduction in emotional symptoms (i.e., symptoms of anxiety and depression) (Heyne et al., 2002). The comparison between the treatment groups showed that the CBT+PT group had a significantly higher level of school attendance compared to the CBT group at post assessment, but not the PT group. However, no differences were found between the three groups at a later follow-up assessment (Heyne et al., 2002). Furthermore, there was a difference in mother-reports of youths symptoms of internalizing problems at post-treatment, were the CBT-PT and the PT group showed significantly fewer signs of internalizing problems compared to the CBT group (Heyne et al., 2002). This study presented an influential evaluation of CBT treatment used to treat SR, and their findings show that CBT treatment which includes parents and teachers, is more effective than CBT alone for treating SR. Their findings highlight the importance of including parents and teachers in the treatment of SR.

Although there are clear distinctions between youths with SR and youths with TR, they are not mutually exclusive and may both present externalizing and internalizing mental health problems (Egger et al., 2003; McShane et al., 2001). Although their treatment approaches differ, both SR and TR could benefit from similar treatment elements, such as increasing school bonding and reducing mental health problems. Future SAPs interventions should be designed to include youths regardless of SAP type and treat their presenting SAPs and coinciding difficulties, such as school disengagement or mental health problems.

1.3.3. Treating SAPs and comorbid mental health problems

The co-occurrence of different types of mental health disorders is frequent among youths with SAPs. As seen in the CBT treatment study by Heyne et al. (2002), they targeted youths with anxious SR, participants presented with both anxiety and depressive disorders. Following treatment, participants showed an increase in school attendance as well as a reduction in both levels of anxiety and depression

(Heyne et al., 2002). These findings highlighted the opportunity to address the heterogeneous mental health disorders among youths with SAPs using a CBT treatment approach.

Transdiagnostic CBT interventions using a modular approach have been developed to target anxiety, depression, and behavior problems within the same treatment protocol (Weisz et al., 2012). In a randomized controlled trial (RCT), Weisz et al. (2012) showed that transdiagnostic CBT treatment outperformed both standard evidence-based CBT and treatment as usual (TAU) in the treatment of youth symptoms of anxiety, depression and behavioral problems. Findings from studies of CBT treatments for youths with SAPs, show increases in youths school attendance, reductions on different symptoms of mental health problems (e.g., anxiety, depression, and behavioral problems), and an increase in school-related self-efficacy (Hannan et al., 2019; Heyne et al., 2002; Melvin et al., 2016; Reissner et al., 2015; Walter et al., 2010). These findings suggest that CBT treatment is a viable treatment option for youths with SAPs that present with different mental health problems.

Although no study has used a transdiagnostic CBT treatment design to treat youths with SAPs, some studies have used CBT to target a range of coinciding mental health problems (Hannan et al., 2019; Reissner et al., 2015; Walter et al., 2010).

In an observational study by Walter and colleagues (2010), they examined the treatment effect among a large sample (*n* = 147) of inpatient adolescents (12-18 years) receiving treatment for SAPs and comorbid mental health problems. The adolescents presented a range of different mental health problems (e.g., anxiety disorders or depressive episodes), and comorbid problems (e.g., emotional disorders with conduct problems). They received manual guided multimodal CBT and included both adolescents and parents in treatment. At the end of inpatient, treatment there was a significant increase in youths' school attendance and a decrease in measures of mental health problems rated by the adolescents and their parents (i.e., anxiety/depression, disruptive behavior, and learning behavior). In severe cases of SAPs (i.e., complete absence for more than three months), the adolescents attended an inpatient school at the hospital (*n* = 72), the rest of the sample (*n* = 75) worked on increasing their school attendance in their regular local schools. Although the school attendance improved following treatment,

there was still a significant proportion (31.3%) of the adolescents still attending the inpatient school at follow-up (Walter et al., 2010). The study showed that manual guided CBT and parent training could have significant and lasting positive effects on adolescents with SAPs and comorbid mental health problems (i.e., emotional and behavioral problems). However, the high number of adolescents who were still attending the inpatient school suggests that there is a need for more effective interventions relating to the integration of adolescents into their regular schools. There are also limitations to the study's observational design, as the results were not compared to a control group.

In an RCT study by Reissner and colleagues (2015), they investigated the treatment effects of manual guided multimodal treatment (MMT) for youths with SAPs (*n* = 56), compared to a group receiving treatment as usual (TAU) (*n* = 56). The MMT included modules of CBT, family counseling, school-related counseling, and psychoeducational exercise program. The MMT treatment was provided at a psychiatric hospital, and private psychiatrists conducted the TAU treatment. There was no significant difference between the two treatment groups in the proportion of youths with regular attendance at 6-months or at 12-month follow-up. There was a significant group difference in the reduction of symptoms of depression, in favor of the MMT condition. The study also found a significant increase in self-efficacy in both treatment groups, similar to previous treatment studies for SAPs (Heyne et al., 2002; King et al., 1998). Both the MMT group and TAU group received extensive treatment, consisting of 1.191 hours in the MMT group, and 221 hours in the TAU group. Their study is currently the only RCT study treating youths with SAPs and a range of mental health problems, and showed promising results in an inpatient setting. Reissner et al. (2015) suggested that a collaboration with the youths' schools could improve the results, and future studies should be conducted in an outpatient setting to both improve effectiveness and reduce treatment costs. The extensive amount of MMT treatment and the non-significant difference between the MMT and the TAU condition, suggest that future studies should aim to improve the treatment effects related to school attendance while condensing the amount of treatment provided.

1.3.4. Calls for further treatment development

Although the modular and multimodal approach to treating youths with SAPs have shown promising results, there was still a considerable proportion of youths who did not regularly attend school following

treatment (Reissner et al., 2015; Walter et al., 2010). There was a high number of youths who did not return to their local schools and remained in hospital school after treatment. There are also possible limitations to the treatment of SAPs in inpatient settings, as research has shown that the transition from inpatient psychiatric care to a school setting may be difficult for some families. The lack of family support and coordination in the transition period can heighten the risk for remission (Weiss et al., 2015), and youth also experience fears related to peer relationships, academic performance, and relationships to school personnel following discharge from a psychiatric inpatient treatment (Simon, Joan, 2005). Thus, SAPs treatments should incorporate a close collaboration with the youths' schools to increase the number of youths who successfully increase their school attendance at their regular school.

Although studies have shown that mental health problems are prevalent among youths with SAPs, this does not necessarily mean that all youths with SAPs have a mental health problem. Rather, indicating that symptoms of mental health problems are common among youths with SAPs (Gubbels et al., 2019). Previous studies have used mental health disorders as an inclusion criterion for providing SAP treatment (Heyne et al., 2002; King et al., 1998; Last et al., 1998; Melvin et al., 2016; Reissner et al., 2015). Such a procedure could lead to the exclusion of youths struggling with SAPs and sub-clinical symptoms of mental health problems, who might benefit from treatment addressing these symptoms. Furthermore, to avoid a wait-to-fail approach, interventions targeting SAPs should commence when a SAP is emerging (Kearney & Graczyk, 2014), and not when a coinciding mental health disorder are identified.

Future SAPs treatments, need to include a close collaboration with schools to improve the frequency of youths obtaining regular attendance and hinder later reoccurrence of SAPs. Previous studies have suggested that outpatient treatments, following a manualized treatment design, could provide timely and effective intervention for youths with SAPs. Treatments following multimodal or transdiagnostic approaches could also be beneficial for handling different coinciding mental health problems among youths with SAPs.

2. Methods and procedures

All the included papers derive from the same research project, namely the Back2School project. Several of the methods, procedures, and measures used in the individual studies are, therefore, indistinguishable. The Back2School (B2S) program, comparable study setting, therapists conducting the B2S treatment, assessment procedures, and measures used will be outlined briefly.

2.1. The Back2School program

The Back2School program (B2S) is a manual guided CBT program developed specifically to treat SAPs among youths (Thastum & Arendt, 2017). The B2S program was designed to be used together with the MindMyMind (MMM) program (Jeppesen, 2017). The MMM is a transdiagnostic CBT program that comprises of evidence-bas ed CBT methods and techniques organized into disorder-specific modules to target subclinical or clinical levels of anxiety, depression, behavioral disturbance, and trauma-related problems. The modules are designed to target school-aged children (i.e., age 6-16 years), providing case-descriptions and age-specific instructions for both children and adolescents, which help the therapists adjust the treatment to different age-groups. The MMM manual supplements the B2S program, and the B2S manual refers to relevant material in the MMM manual. In the development of the intervention, aspects of the @SCHOOL intervention (Heyne, Sauter, Ollendick, Van Widenfelt, & Westenberg, 2014) and the When Children Refuse School intervention (Kearney & Albano, 2007) were adapted and included in the B2S program. The overall aim of the B2S program was to increase school attendance among youths with SAPs by decreasing symptoms of anxiety, depression, and behavioral problems. The B2S treatment was delivered individually involving youths, their parents, and relevant officials from the youth's school.

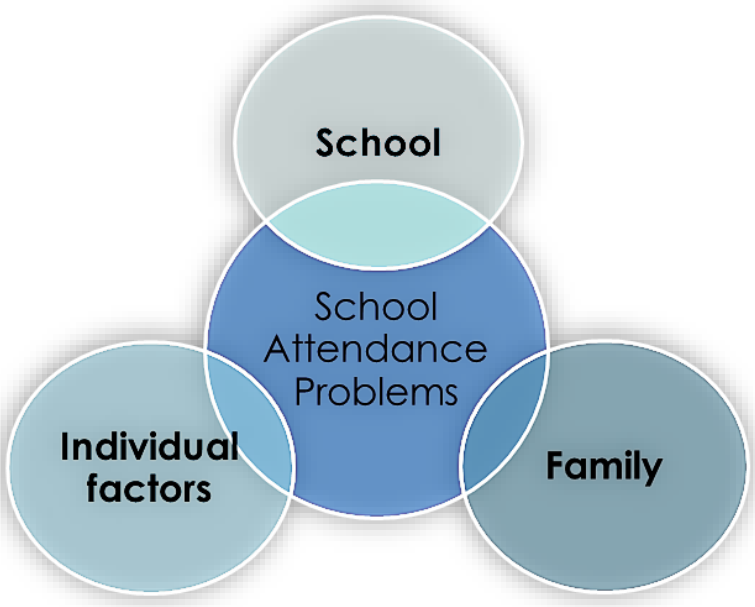


Figure 2. School attendance problems are influenced by individual factors such as anxiety, depression, and behavioral problems. They are also affected by family and school factors.

2.1.1. Clinical assessment

All youths and parents receiving B2S treatment, initially participated in a 1.5-hour clinical assessment, conducted by the assigned therapists using a semi-structured clinical interview. The interview was designed to get an understanding of the youth's development, family and social situation, functioning in daily life, and SAPs. The interview also included a brief, semi-structured psychopathological interview assessing symptoms of psychopathology. In addition to the clinical assessment, the therapists examined the families' ratings on the psychometric questionnaires, as well as conducting a functional analysis using the *School Refusal Assessment Scale*.

2.1.2. Functional analysis

The B2S treatment was tailored to fit youth presenting problems and was determined via a descriptive functional analysis obtained via the School Refusal Assessment Scale (SRAS) (Kearney & Silverman, 1993). The functional approach involves identifying the motivational function of the child's SAPs. Motivational functions include (1) avoidance of school-based situations that provoke negative affectivity, (2) avoidance of aversive school-based social/evaluative situations, (3) pursuit of attention from significant

others outside of school, and (4) pursuit of tangible reinforcement outside of school (Kearney & Albano, 2007; Kearney & Silverman, 1993). The first two motivational functions refer to negative reinforcement; the latter two motivational functions refer to positive reinforcement. SAPs motivated by positive reinforcement suggests CBT procedures such as parent management, contingency management, and contracting to minimize incentives for SAP and boost incentives for attendance. SAPs motivated by negative reinforcement recommends CBT procedures such as cognitive restructuring and exposure-based practice to reduce the anxious or depressive physical sensations and thoughts. Following the functional analysis from the SRAS, a case formulation approach is conducted to planning CBT for attendance problems.

2.1.3. Case-formulation

Following the clinical assessment, the therapists fashioned a preliminary case-formulation based on the clinical assessment. The structure of the case-formulation followed the framework proposed by Carr (2006), where factors related to the development and maintenance of the youth's problem were included in the case-formulation. The included elements in the case-formulation included the youths presenting problems, predisposing factors, maintaining factors, protective factors, and precipitating factors (Carr, 2006). The case formulation was presented and discussed in a simplified form, with the family and the school (See *Figure 3*). The case-formulations main goal was to establish a common understanding of the presenting SAPs between the therapists, youths, parents, and schools. Furthermore, when introduced to the families and schools, the therapists underline the importance of a unified approach working with the youths SAPs. The aim of both the common understanding and a unified approach between therapists, families, and schools was to handle and solve the youths' SAPs effectively. The case-formulation includes a description of the youth and family's, strengths (e.g., excellent communication between parent and youths), factors that are maintaining the SAPs (e.g., seating situation in the classroom), and an agreed-upon individualized description of the youths' presenting SAPs (e.g., Daniel is afraid of attending school, due to a fear of being teased due to his foreign accent).

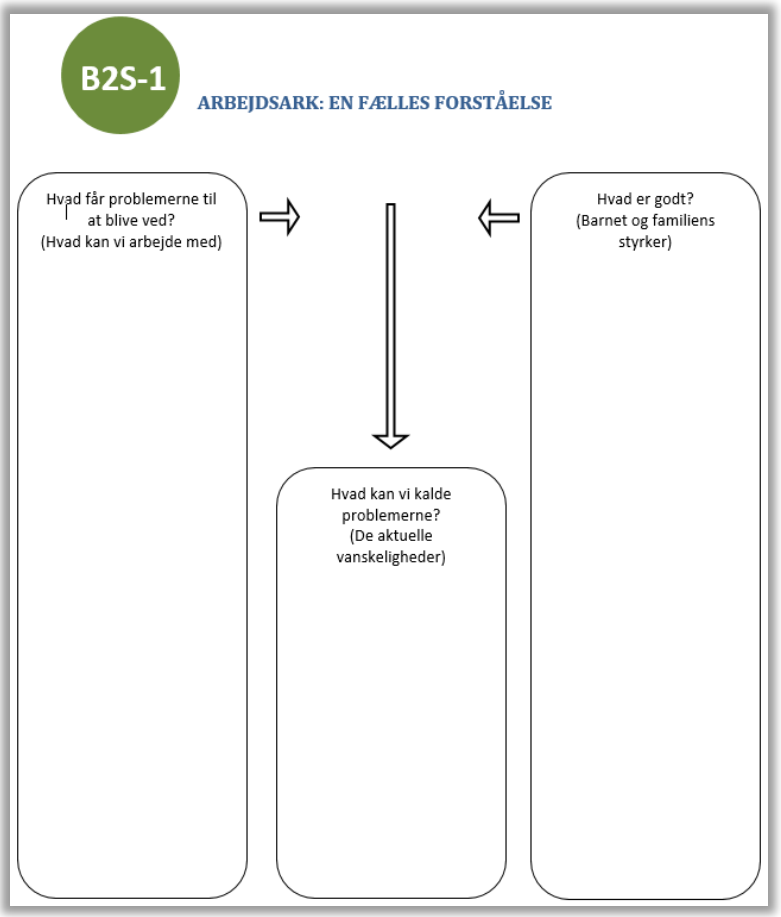


Figure 3. The simplified version of Carr's case-formulation (2006), named "A common understanding", was presented to the families and actively used to tailor the B2S treatment for each family individually.

2.1.4. The Back2School Treatment

The B2S treatment was delivered individually involving youths and their parents and included a close collaboration with relevant officials from the youth's school. The intervention consisted of the mentioned 1.5-hour clinical assessment, ten 1-hour sessions with the child and parents together (except for sessions 2 and 6, which are only with the parents), a 1-hour booster session with the child and parents together, and four school meetings. The first two weeks of the intervention involved two sessions per week. In the following six sessions, there was an option to schedule sessions weekly or bi-weekly, as decided to be appropriate by the therapist and the family together. The implementation of the booster session was flexible regarding the timing and was be held within 1– 3 months after the last session. In addition to the treatment sessions, four meetings with the participation of teachers and other school officials from the youth's school, the therapists, and the parents were conducted. The school meetings

were held at youths' school, at the beginning, middle, and end of the treatment period, as well as shortly after the booster session. For a detailed overview of the intervention see *Table 1*. The B2S manual suggested a standard structure, which can be seen in *Figure 4.* However, the planning and structure of the B2S treatment regarding the sessions and school meetings were flexible, and the therapist could arrange the sessions to best fit with the youth and parents' situation and needs. For example if the youth presents a high reluctance towards returning to school. The therapists could choose to introduce session S-4 (i.e., psychoeducation regarding the youths' primary problem related to school absence) before session S-3 (i.e., planning the date of returning to school) (*Table 1*). The B2S treatment was also flexible within sessions. For example, the sessions could be split-up (e.g., therapist and parents, and therapist and youth) if the therapists deemed it beneficial and more appropriate to address a subject separately (e.g., discussing the change of schools with parents, or discussing an embarrassing topic alone with a teenager).

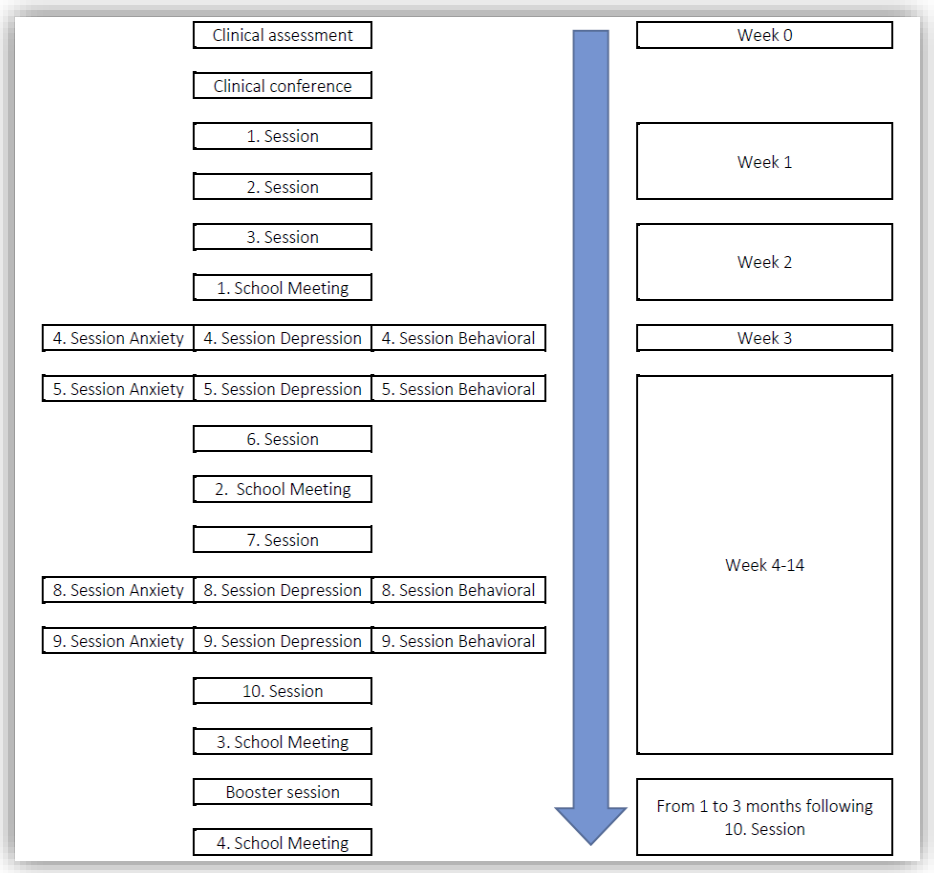


Figure 4. Overview of a typical Back2School treatment plan.

Table 1: Overview of the Back2School program			
Session number	**Participants**	**Duration (hours)**	**Session content**
S-0	T, Y, P	1.5	Structured assessment interview with the family conducted by the therapists (a clinical psychologist and a clinical psychology graduate student). The family receives handouts regarding psychoeducation and SMART goals as homework for session 1.
Clinical conference	T	1	The therapists are discussing the case formulation, choice of treatment modules, and treatment goals with a clinical psychologist at CEBU
S-1	T, Y, P	1	Presenting and discussing the case-formulation with the family. Psychoeducation regarding school absence and development of SMART goals.
S-2	T, P	1	Parent only session 1. Helping the parents to clarify and solve potential questions/problems regarding school placement, somatic symptoms in the youth, and parental motivation for change. Planning better routines at home. Working with potential sleep problems.
S-3	T, Y, P	1	Planning the date for returning to school, and planning the first day back in school. Creating a gradual exposure plan for returning to school.
S-4	T, Y, P	1	Psychoeducation regarding the youth's primary problem related to school absence (anxiety, depression, or behavioral problems) by including the MMM Modules. Continuing work with the gradual exposure plan for returning to school.
S-5	T, Y, P	1	Continuing work with CBT methods regarding the youth's primary problem related to school absence (e.g., exposure, behavioral activation and/or cognitive restructuring) by including the MMM Modules. Continuing work with the gradual exposure plan for returning to school. Working with boundaries.
S-6	T, P	1	Parent only session 2. Working with parent behavior. Identifying and reducing factors at home that maintain school absence.
S-7	T, Y, P	1	Continuing to work towards returning to school. Revising gradual exposure plan. Focusing on how parents can support the youth in exposure exercises, and returning to school. Problem solving
S-8	T, Y, P	1	Open session tailored to needs of the youth and parents. Continue working with CBT methods by including the MMM Modules.
S-9	T, Y, P	1	Open session tailored to needs of the youth and parents. Continue working with CBT methods by including the MMM Modules.
S-10	T, Y, P	1	Concluding the program. Focusing on maintaining and continuing the progress.
Booster	T, Y,P	1	Focusing on maintaining and continuing the progress. Problem solving regarding relevant problems. Advise possible further help.
SM 1	T, P, S	1	Presenting and discussing the case formulation with the school. Planning the schools role in the youth's return to school. Informing the school about the B2S and CBT approach.
SM 2	T, S	1	Following up on the youth's progress in the school setting. Discussing potential academic difficulties, problems regarding bullying or other problems.
SM 3	T, S	1	Planning how the school can continue to help and support the youth. Discussing relapse prevention.
SM 4	T, S	1	Planning how the school can continue to help and support the youth. Discussing relapse prevention.

Note: S = Session, SM = School Meeting, Y = Youth, P = Parent, T =Therapist, S = School officials

2.1.5. Clinical conference

Following the clinical assessment, the development of a preliminary case-formulation and treatment plan. The case-formulation and preliminary treatment plan were discussed, with a clinical psychologist, at a clinical conference. Following the clinical conference, the case-formulation and treatment plan was revised if necessary.

2.1.6. Study setting

The studies were all conducted at the Center for Psychological Treatment for Children and Adolescents (CEBU) at Aarhus University, Jutland, Denmark. Before the start of the Back2School project, Aarhus municipality implemented widespread and extensive information campaigns aimed at families and professionals within the municipality. All participating families were required to make initial contact with CEBU to participate in any of the included studies. The majority of the samples included (Feasibility and RCT) were drawn from Aarhus municipality, while a small proportion of the families were from Odder municipality. All participants receiving B2S treatment received treatment at CEBU. The school meetings were held at the youth schools in either Aarhus or Odder municipality.

2.1.7. Participants

The participants described in the included papers are derived from two separate samples, recruited for the feasibility study (n = 24) and RCT study (n = 152), respectively. Both samples included youth with SAPs and their parents. The sample characteristics will be presented in more detail for each of the included papers.

2.1.8. Therapists

School psychologists from Aarhus Municipality and clinical psychologists from CEBU conducted the B2S intervention, together with a clinical psychology graduate student at CEBU functioning as co-therapist. All therapists had limited prior clinical experience and were regarded as novices in conducting CBT treatment. All therapists and co-therapists received a 6-day training course and four 1-day brush-up courses regarding assessment, case formulation, and the B2S and MMM manuals. In total, therapists

and co-therapists received 80 hours of training. All therapists and co-therapists received weekly face-to-face group case supervision by specialists in clinical child psychology in both the feasibility and RCT study.

2.2. Measures and assessment

The primary outcome measure of *school attendance* was assessed using both self-reported and registry-based school attendance data. All the included participants (i.e., youths and parents) completed an online assessment providing information regarding their sociodemographic background characteristics, and included a battery of questionnaires assessing *anxiety*, *depression*, *self-efficacy*, *quality of life, emotional and behavioral difficulties*, and *interference.* The assessment points varied between the studies (e.g., no assessment in Paper 2., and four assessment points in Paper 1). For an overview of the assessment point in the different studies, see *Table 2.* For an overview of the various measures used in the different papers, see *Table 3*.

Table 2. Overview of assessments in the included papers

Papers	Pre	Post	3-FU	12-FU
Feasibility study of the Back2School program	●	●	●	●
Study protocol for the RCT study of the Back2School program				
Baseline study: Who are missing school?	●			
RCT of the Back2School program	●	●	●	

Note: Pre = pre-treatment, Post = Post-treatment, 3-FU = 3-month follow-up , 12-month follow-up

2.2.1. School attendance – Parent-reported inclusion measure

Prior to inclusion in the feasibility (Paper 1: Lomholt et al., 2020), the baseline (Paper 3: Johnsen et al., 2020a) and the RCT (Paper 4: Johnsen et al., 2020b) study, parents were asked to rate how much their child had missed school in the last three months. They replied to the following six categories: 'Less than 10% (less than six absent days)', '10-20% (approximately 6-12 absent days)', '20-30% (approximately 12-18 absent days)', '30-50% (approximately 18-30 absent days)', '>50% (more than 30 absent days)', '100% (the child has not attended school in the last three months)'. This measure was used to determine if the youths had a SAP, and used as an inclusion criterion in the RCT study (see *Appendix D: Paper 4*).

2.2.2. School attendance – Parent-reported hours of school attendance

Recent movements in the field of school attendance research, call for a change in the narrative from absenteeism to attendance (Gentle-genitty, Taylor, & Renguette, 2020). Therefore we chose to address youths' days of attendance instead of days of absence in the RCT study (Paper 4). In the RCT study (Paper 4: Johnsen et al., 2020b), parents retrospectively reported the youths' school attendance during the last ten school days. Parents were asked to indicate for the previous ten school days, the number of hours of school the youths' should have attended each day based on class schedules, and report how many hours of school the youths attended each day (e.g., attended 25 out of 30 planned school hours). The percentage of school attendance reported in the previous ten school days was computed for each individual, and an aggregated percentage was reported for all assessment points (i.e., pre, post, FU).

2.2.3. School attendance - School attendance records

The school attendance records for all the included participants were obtained from Aarhus and Odder municipality. Absent days were registered by the schools prospectively day-by-day, excluding weekends and official school holidays, and were coded dichotomously (1 = absent, 0 = present). All absent days in Danish public schools are registered as one out of three categories: (1) absence due to illness, (2) excused absence, or (3) non-excused absence. Absence due to illness is due to sickness or another functional impairing condition that prevents the student from attending school. Excused absence refers to extraordinary absence granted by the schools (e.g., important family events; vacation outside official school holidays), which is not deemed to have negative consequences for the student. Non-excused school absence is defined as absence where parents fail to inform the school of the reason for the absence or fail to provide a medical certificate if requested by the school in periods of absence due to illness (Danish Ministry of Children and Education, 2019). The measurement points and length of the period measured in the feasibility study, baseline study, and the RCT study are described below.

2.2.3.1. Feasibility study (Paper 1)

The school absence data used in the feasibility study (Paper 1: Lomholt et al., 2020) was provided by Aarhus municipality. The youths school absence was calculated as a percentage of absence in each of the following periods: (a) the 20 days before the baseline questionnaires (pre); (b) the 20 days after the

post-intervention assessment (post); (c) the last ten days after the 3-month follow-up assessment (3-months follow-up); and (d) the ten days after the 12-month follow-up assessment (12-months follow-up).

2.2.3.2. Baseline study (Paper 3)

In the baseline study (Paper 3: Johnsen et al., 2020a), a retrospective examination of the youths' school absence was conducted. The school absence data were provided by Aarhus and Odder municipality. Two variables were constructed to depict the youths' short-term and long-term school absence. Short-term absence was defined as the percentage of missed school days in the last three months of school (i.e., 60 school days). Long-term absence was defined as the percentage of missed school days in the previous ten months of school (i.e., 200 school days). The mean percentage of each of the ten school months were also calculated. The percentage of school absence categorized as either *absence due to illness*, *excused absence*, or *non-excused absence* was calculated for both the short- and long-term school absence.

2.2.3.3. RCT study (Paper 4)

In the RCT study (Paper 4: Johnsen et al., 2020b), days of school attendance were assessed using the school attendance data from Aarhus and Odder municipality. The school attendance measure was based on the previous ten days of school, at all assessment points (i.e., pre, post, 3-month follow-up), coded dichotomously (0 = *missing*, 1 = *attending*), excluding weekends and official school holidays. The percentage of days of school attendance was calculated by tallying the days of attendance in the last ten school days.

2.2.4. Anxiety

Youth anxiety was measured using the Spence Children's Anxiety Scale (SCAS; Spence 1998). The SCAS is a self-report rating scale for assessing symptoms of anxiety, consisting of 44 items (including six positive filler-items) rated on a 4-point scale (0 = never, 1 = sometimes, 2 = often, 3 = always). There are six subscales reflecting symptoms specifically related to social phobia (six items; range from 0-18), panic disorder and agoraphobia (nine items; range from 0-27), generalized anxiety disorder (six items; range

from 0-18), obsessive-compulsive disorder (six items; range from 0-18), separation anxiety disorder (six items; range from 0-18), and fear of physical injury (five items; range from 0-15). A total score reflects the overall severity of anxiety symptoms, ranging from 0-114. Higher scores indicate higher levels of anxiety. The SCAS includes both a child (SCAS) and parent version (SCAS-P) (Arendt, Hougaard, & Thastum, 2014)

2.2.5. Depression

Youth depression was measured using the Mood and Feelings Questionnaire (MFQ; Daviss et al. 2006). The MFQ is a self-report questionnaire covering a broad range of cognitive and vegetative symptoms of depression, consisting of 33 items rated on a 3-point scale (0 = not true, 1 = sometimes true, 2 = true), and ranges from 0-66. The summed score reflects the presence and severity of depressive symptoms. Higher scores indicate higher levels of depression. The Danish version of the MFQ has demonstrated high internal consistency (Eg, Bilenberg, Costello, & Wesselhoeft, 2018). In the current sample, the internal consistency for the MFQ was $\alpha = .93$. Youth depression was also rated by parents using the Mood and Feelings Questionnaire – Parent version (MFQ-P; Daviss et al., 2006). The MFQ-P consists of 34 items and is rated and scored in the same way as the MFQ. The Danish version of the MFQ-P has demonstrated high internal consistency (Eg et al., 2018).

2.2.6. Emotional, behavioral difficulties and interference

Youths' emotional and behavioral difficulties were measured using the extended version of the Strengths and Difficulties Questionnaire (SDQ; Goodman 1997). The SDQ is a brief behavioral screening questionnaire for youths, consisting of 25 items rated on a 3-point scale (0 = not true, 1 = somewhat true, 2 = certainly true), divided into five 5-item subscales (emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behavior). Subscales range from 0-10, and the total score (excluding prosocial behavior) ranges from 0-40. Higher scores for the first four subscales indicate more problems; higher scores for the fifth subscale indicate more prosocial behavior. The SDQ includes an impact scale assessing a youth's distress and the interference of problems, consisting of five items rated on a 4-point scale (0 = not at all, 0 = a little, 1 = quite a lot, 2 = a great deal); range from 0-10. Higher scores indicate higher interference. The Danish version of the SDQ has shown

high internal consistency (Niclasen et al., 2012). The SDQ includes both a youth, parent, and teacher version. The Danish version of the SDQ has shown acceptable internal consistency (Cronbach's α = 0.44–0.86) (Niclasen et al., 2012).

2.2.7. Self-efficacy

Youth self-efficacy was measured using the Self-Efficacy Questionnaire for School Situations (SEQ-SS; Heyne et al., 1998). The SEQ-SS contains 12 items about different situations associated with school attendance, each rated on a 5-point scale ranging from 1 to 5. The items are summed according to two subscales, Academic/Social Stress, and Separation/Discipline Stress. A total score is calculated by summing all items (scores range from 12 to 60). Higher scores indicate a higher level of self- efficacy. The English version of the SEQ-SS has demonstrated high internal consistency (Cronbach's α = 0.81–0.85) and good test-retest reliability (r = 0.79–0.91) (Heyne et al., 1998). Parental self-efficacy was measured using the Self-Efficacy Questionnaire for Responding to School Attendance Problems (SEQ-RSAP; Heyne et al., 2016). The SEQ-RSAP contains 13 items concerning the parents' level of self-efficacy in relation to helping their child attend school regularly and without difficulty. The items are rated on a 4-point scale ranging from 1 to 4. The items are summed to yield a total self-efficacy score (scores range from 13 to 52). Higher levels of reported self-efficacy are represented by a higher score. A preliminary unpublished study of a longer version demonstrated high internal consistency (Cronbach's α = 0.91) and good test-retest reliability (r = 0.67) (Lavooi, 2010).

2.2.8. Quality of Life

Youths health-related quality of life was assessed using the Child Health Utility 9D Index (CHU-9D) (Stevens, 2012). The CHU-9D was designed to determine how health affects children's lives and is rated by the youth. The CHU-9D is a generic preference-based measure of health-related quality of life designed for the estimation of quality-adjusted life-years for economic evaluation of health care. It consists of nine dimensions (worry, sadness, pain, tiredness, annoyed feeling, schoolwork/homework, sleep, daily routine, and activities), each with five levels on which the child chooses the level fitting to how they are feeling. The instrument has previously been validated among children and adolescents in

Great Britain and Australia, showing good psychometric properties (Canaway & Frew, 2013; Stevens, 2012)

2.2.9. Treatment satisfaction

Treatment satisfaction was assessed using the revised version of the Experience of Service Questionnaire (ESQ), used to assess satisfaction with the treatment (Attride-Stirling, 2002). The ESQ was administered to youths, and parents at post-treatment. There are separate versions for youths, with seven items for youths and ten items for parents, both including open-ended questions for qualitative feedback.

2.2.10. Background information

Participating families provided background information regarding family demographics, youth's school and SA problems, youth's mental and physical health, parents' mental and physical health, and youth's previous and ongoing treatment.

Table 3: Overview of measures used in the included papers

Measure	Y, P, T, M	P1	P2	P3	P4
School attendance – Inclusion measure	P	●		●	●
School attendance – Hours of school attendance	P	●			●
School attendance – Registry-based days of school absence/attendance	M	●		●	●
Emotional, behavioral difficulties and interference (SDQ, SDQ-P, and SDQ-T)	Y, P, T	●		●	●
Depression (MFQ and MFQ-P)	Y, P	●		●	
Anxiety (SCAS and SCAS-P)	Y, P	●		●	
Self-efficacy (SEQ-SS and SEQ-RSAP)	Y, P	●			●
Quality of Life (CHU-9D)	Y				●
Treatment satisfaction (ESQ)[a]	Y, P	●			●
Background information	P, T	●		●	●

Note: Y = Youth, P = Parent, T = Teacher, M = Municipality, P1 = Feasibility study, P2 = RCT protocol, P3 = Baseline study, P4 = RCT study
[a]Only parents reported on the ESQ in both groups (i.e., B2S and TAU) in the P4 (RCT study)

3. Feasibility study of the Back2School program (Paper 1)

Authors: Johanne Jeppesen Lomholt, Daniel Bach Johnsen, Wendy K. Silverman, David Heyne, Pia Jeppesen, and Mikael Thastum

3.1. Aim and structure

A feasibility study provides valuable information about improvements that may need to occur before initiating a larger RCT, thereby improving the quality and integrity of the RCT (Orsmond & Cohn, 2015). The objectives of the current feasibility study (Lomholt et al., 2020) were to both examine the feasibility of the B2S program in preparation for the forthcoming RCT study, and evaluate the acceptability of the B2S program in a non-randomized trial. The results from the study were used to inform changes in the B2S program and the procedures used in the subsequent RCT study.

The study followed the model for feasibility studies as proposed by Orsmond and Cohn (2015) and included an examination of the: recruitment capability and the resulting sample characteristics; data gathering procedures, including the suitability of selected outcome measures based on response rate and comprehension level; the acceptability of the intervention and study procedures; and the resources needed to implement the study and intervention. The feasibility study also served as a preliminary evaluation of the impact of the intervention.

3.2. Participants

The sample consisted of 24 youths (M = 12.7 years, *SD* = 2.4, range 8–16 years) and their parents. There was an equal number of girls and boys, and one-fourth of the youths were completely absent from school across the last four weeks before study inclusion. All youths had received treatment before study inclusion due to their SAPs. Eight youths (33%) had one or more psychiatric diagnoses prior to inclusion, and they all had an anxiety disorder as one of their diagnoses. For the parents, 21% reported mental health problems themselves. In the semi-structured psychopathology interview, all but one youth reported psychiatric symptoms. Symptoms related to anxiety and/or depression were most often

reported (75% reported anxiety symptoms, 46% reported depressive symptoms). See Appendix A: Paper 1: Lomholt et al., (2020), for a detailed overview of the sample sociodemographic characteristics.

3.3. Results

3.3.1. Acceptability and treatment satisfaction

The feasibility study found high acceptability of the intervention and high satisfaction ratings. Of the 24 families, 22 families (92%) completed the intervention. Of the included the 22 families, 19 (86%) completed all ten sessions, one family completed nine sessions, and two families completed eight sessions. The booster session was conducted with 19 families (86%). Thirteen (59%) of the families completed all four planned school meetings. One family (4%) did not include any school meetings. On average, the first school meeting was conducted 26 days after the first session (range 6– 46 days). The mean duration of the B2S intervention (from the first session to the 10th session) was 80 days, with a range of 55–139 days. The intervention duration was prolonged for three families due to the schools' summer holiday. On average, there were 76 days from the last session to the booster session with a range of 35–136 days. For most of the families, the time between the last session and the booster session was prolonged due to the summer holiday. The whole B2S program, from assessment interview to booster session, spanned, on average, 182 days (range from 154 to 210 days).

Both youth and parents were generally satisfied with the B2S treatment. The majority of the youths (75%) and all parents (100%) answered "*certainly true*" or "*partly true*" to the statement "If a friend needed similar help, I would recommend B2S" and all answered "*certainly true*" or "*partly true*" to the statement "I trusted the therapist" All parents answered "*certainly true*" or "*partly true*" to the statement "I have been given enough information about the purpose and course of B2S prior to treatment start" and all youths answered "*Certainly true*" or "*partly true*" to the statement "*The therapist had an understanding of my worries and issues*". At the 12-month follow-up, 67% of the youth reported that they used the strategies from B2S, and 77% of the parents found the strategies helpful and a part of their everyday life. The B2S strategies which the parents still found useful at the 12-month follow-up were related to the specific cognitive behavioral techniques (e.g., graduated exposure, problem-solving, rewarding, and cognitive restructuring).

3.3.2. Preliminary outcome of the intervention

There was a substantial and significant reduction in youths' level of school absenteeism from 67% at baseline to 26% at post-assessment, and to 20% at 12-month follow-up (see *Figure 4*), $d = 1.36$, $p = .001$.

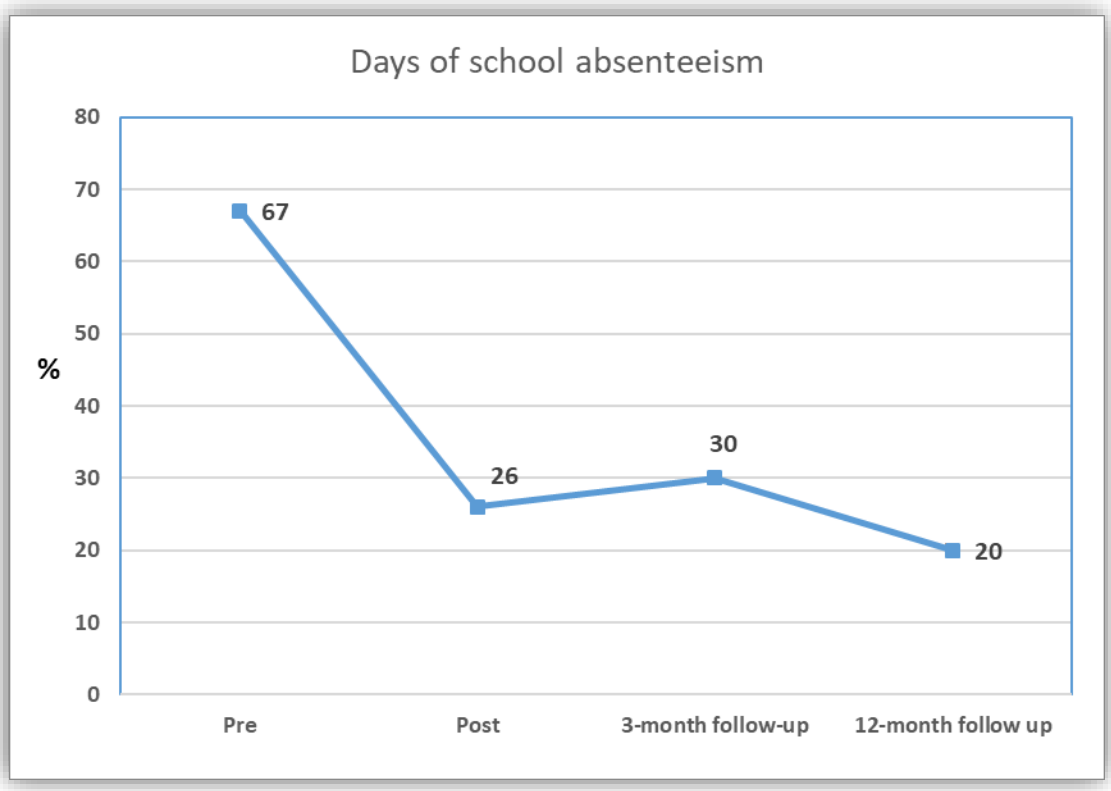


Figure 4. Mean percentage of school absenteeism at all time points (pre to 12-month follow-up).

As seen in figure 5, all youths presented with levels of school absenteeism over 10% at prior to treatment start. Following treatment, a high proportion of the youths had improved their attendance, and 11 (46%) of the youths had achieved non-problematic school absence levels (< 10% school absence). This positive development was also seen at the 3-month follow up (*n* =13, 54%), and the 12-month follow-up, where 16 (67%) of the youths' had non-problematic school absence levels (< 10% school absence).

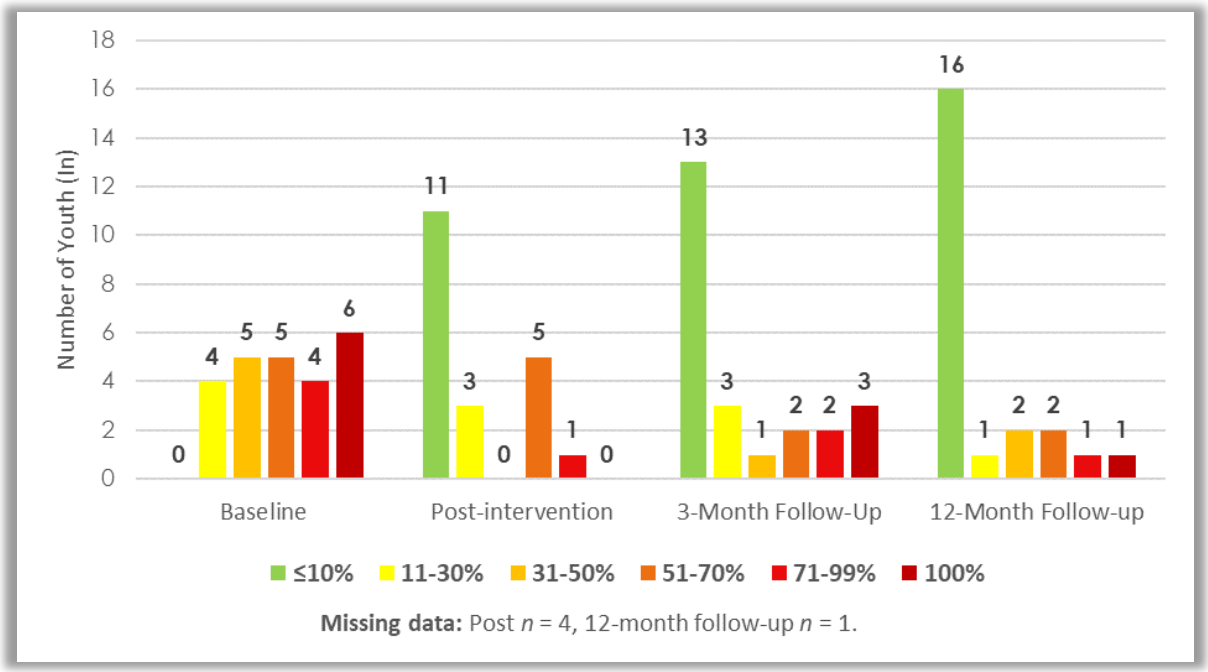


Figure 5. Level of school absenteeism

There were also significant reductions in symptoms of emotional and behavioral problems (SDQ), anxiety (SCAS), and depression (MFQ) and rated by the youth and parent. There was also a significant increase in youths' and parents' self-efficacy related to SAP, following the B2S treatment.

3.4. Changes for the RCT study results

The feasibility study highlighted some areas of the B2S treatment and assessment procedures, which needed to be improved or changed for the upcoming RCT study of the B2S program. A fundamental change made to the B2S treatment manual was to increase the emphasis of the importance of the school meetings and the timing of the meetings. We discovered some discrepancies between the attendance records provided by the municipality and the attendance registered by the families between sessions. We, therefore, implemented parent-reported attendance registration (see *section 2.2.2. School attendance – Parent-reported hours of school attendance*) in the assessment battery at all time points.

4. Study protocol for the RCT of the Back2School program (Paper 2)

Authors: Mikael Thastum, Daniel Bach Johnsen, Wendy K. Silverman, Pia Jeppesen, David Heyne, and Johanne Jeppesen Lomholt.

4.1. Aim and structure

The primary aim of the study protocol was to develop and outline the methods and procedures for the RCT study of the B2S program. As the methods and procedures are presented in the *Methods and Procedures* section, and in more detail in the published protocol (Paper 2: Thastum et al., 2019), the following sections will be limited to a brief description of the development of the online screening procedures and the design of the parent-reported school attendance measure.

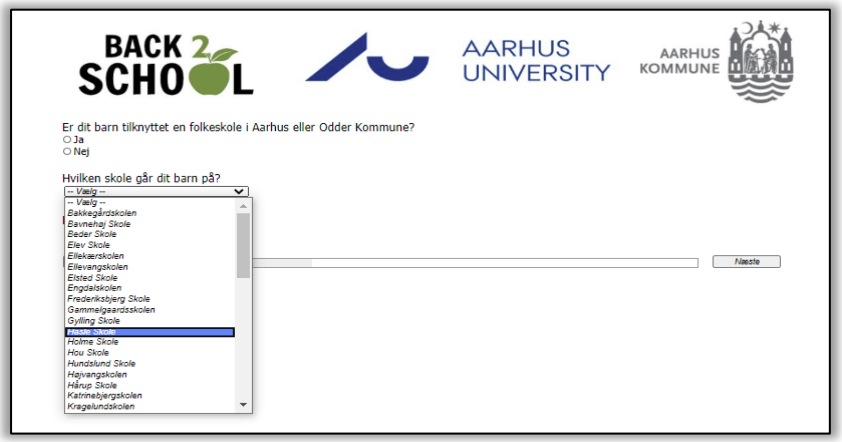
4.2. Inclusion criteria

The study protocol first stated the upcoming RCT study's inclusion criteria, which were as follows: (1) enrolled in a public school within Aarhus Municipality; (2) aged 7–16 years and in 0–9th grade (excluding the second semester of ninth grade); (3) report more than 10% SA during the last three months of school (based on parent-reported information); (4) the youth and at least one of the parents understand and speak Danish sufficiently to participate in treatment and complete questionnaires; (5) at least one of the parents is motivated to work on increasing the youth's school attendance; (6) commitment to participate in assessment, intervention procedures, and acceptance of random assignment to intervention; and (7) written informed consent provided by the holders of the parental rights and responsibilities.

Following a drop in the recruitment, a change in the inclusion criteria was implemented related to inclusion criteria (1), which was changed to also include youths enrolled in public schools from Odder municipality. The change was implemented to increase participant flow and reach the RCT study's required sample size.

4.3. Screening procedures

The registration to participate in the RCT was done through a web-based screening located at the B2S projects web page. The initial screening consisted of a short questionnaire completed by one of the parents based on inclusion criteria with questions relating to: (1) language and school information, (2) their child school absence for the last 3-month period (excluding holidays or other legal absence), and (3) contact information for one of the parents (see *Figure 6*).



Families needed to report if they attended a public school in either Aarhus or Odder municipality, and specify which school.

This was done to both exclude participants who did not fit inclusion criteria (1), and to inform the researchers which schools to contact, regarding participants allocated to the TAU condition.

Parent provided an estimate of their child absence, based on five statements relating to the level of school absence (e.g. 'under 10% school absence' or '30-50% school absence').

If a family did not meet all inclusion criteria, the screening questionnaire ended, and parents were presented with an explanation for why they did not qualify for participation.

Figure 6. Screen dumps from the web-based screening questionnaire.

4.4. Developing a parent-reported school attendance measure

One of the key experiences gathered from the feasibility study was the marked discrepancies between the self- and parent-reported school attendance and the school attendance registry data provided by the municipalities (Paper 1: Lomholt et al., 2020). These discrepancies indicated that the attendance registries were not as reliable as expected, and the possible reasons for the unreliability are outlined in the next paper, *Baseline Study: Who are we missing?* (Paper 3: Johnsen, et al., 2020a). Regardless of the reason for the unreliability, based on these findings, we decided to include a parent-reported measure of youth school attendance.

Due to the mentioned limitations regarding self- and parent-reported the recollections of school attendance (Keppens et al., 2019; Stone et al., 2000), we decided to base the parent-reported attendance measure on a relatively short period of two weeks of school (i.e., ten school days). Based on our experiences from monitoring school attendance in the feasibility study, the measure needed to be flexible in terms of the number of hours for each school day as the school schema differs between schools and grades. The parents, therefore, specified the number of planned hours according to the school schema, and report the number of attended hours of school for each school day. See *Figure 7*. for a screen dump of the questionnaire.

Using a drop-down menu, the parents specified the number of hours for each of the ten school days and reported how many hours the youths attended.

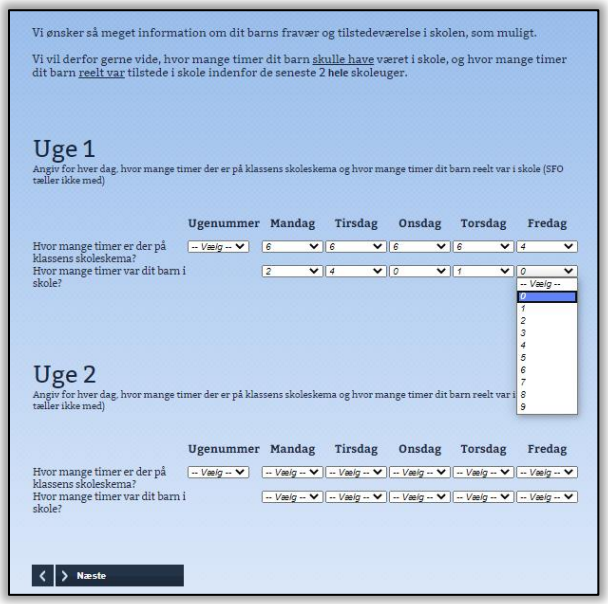


Figure 7. The web-page parents were presented with when reporting the youths' attendance

5. Baseline study: Who are missing school? (Paper 3)

Authors: Daniel Bach Johnsen, Johanne Jeppesen Lomholt, David Heyne, Pia Jeppesen, Morten B. Jensen, Wendy K. Silverman, and Mikael Thastum,

5.1. Aim and structure

Knowledge of youth with SAPs is needed to protect them from associated adverse outcomes, such as school dropout (Schoeneberger, 2012), later unemployment (Attwood & Croll, 2006), social isolation, and mental health problems (Walter et al., 2010), but also for developing effective interventions helping youths with SAPs. Although the characteristics of youths with SAPs have been described in previous studies (e.g., Gonzálvez, Díaz-herrero, & García-fernández, 2020; McShane et al., 2001), few studies have used detailed school absence data to both identify SAPs and describe their presenting characteristics in light of their school absence.

The current study (Johnsen et al., 2020) included a large sample of youths identified with SAPs using a parent-reported school attendance measure (see section 2.2.1. *School attendance – Inclusion measure*). Following inclusion, their school attendance data from the municipality was made available (see section 2.2.3. *School attendance - School attendance records*) and allowed a detailed description of both the youths' school absence in the previous year.

The primary aim of the baseline study was to explore levels of long-term and short-term school absence descriptively, together with the registered absence category (i.e., absence due to illness, excused absence, and non-excused absence) among youths with SAPs. Furthermore, the study aimed to explore youths' school absence and absence categories in light of sociodemographic characteristics and mental health problems. Finally, the study aimed to determine the proportion of youths with SAPs who experienced clinical levels of symptoms of anxiety, depression, or 'emotional and behavioral difficulties'. The study is, to the best of our knowledge, the first to identify youths with SAPs using school absence measures and describe their school absence and development of SAPs over a whole school year.

5.2. Methods

5.2.1. Participants

At inclusion, the youths' mean age was 12.2 years (SD = 2.16; age range 6-16). More than one-half of the youths lived with both parents (n = 84, 55.3%), 41 (27.0%) youths lived with a single parent, and 27 (17.8%) lived in a reconstituted family. Based on parent-reports of youths mental health problems, 40 youths (26.3%) had previously been diagnosed with a mental health problem, the most common were related to an anxiety disorder (n = 18, 11.8%), or a behavioral disorder (n = 17, 11.2%), and autism spectrum disorder (n = 12, 7.2%). Most of the youths diagnosed with a mental health problem had one or more diagnosed comorbid mental health problems (n = 23, 57.5%). Most parents had finished at least a secondary level of education (e.g., high school or vocational degree) (Mothers: n = 144, 93.7%, Fathers: n = 126, 82.9%). Mental health problems were reported among 27.6% (n = 42,) of the mothers and 14.5% (n = 22,) of the fathers. The most common problems were depression (mothers: n = 22, 14.5%, fathers: n = 9, 5.9%) and anxiety (mothers: n = 26, 17.1%, fathers: n = 8, 5.3%). Of the included families, 50 (32.9%) reported that at least one parent had a mental health problem. For a detailed overview of youth and parent characteristics, see *Table 4* and *Table 5*.

5.2.2. Analysis

Mean comparisons (i.e., independent samples t-tests and one-way ANOVA tests) were used to compare the sample means of school absence and absence categories, divided by youths sex (i.e., males and females), age (i.e., younger and older), living situation, mental health problems among youths' and parents' and different parental levels of education.

Also, the proportion of the participants with elevated scores on youth- and parent-reported SCAS, MFQ, SDQ, and SDQ-Impact was assessed using Goodman's (1997) recommendations for frequency distribution. Proposing that approximately 80% of a normative community population is in the 'normal' range, 10% is in the 'borderline' range, and the remaining highest 10% scores are in the 'clinical' range.

Table 4: *Characteristics of youths with SAPs*	
Characteristics	**Youths (N = 152)**
Age, mean (SD)	12.15 (2.16)
Sex, males, no. (%)	92 (60.5)
Short-term school absence – Registry (%), mean (SD)	34.85 (25.92)
Due to illness (%), mean (SD)	56.67 (38.69)
Excused (%), mean (SD)	14.58 (26.00)
Non-Excused (%), mean (SD)	25.46 (33.66)
Long-term school absence – Registry (%), mean (SD)	23.59 (16.01)
Due to illness (%), mean (SD)	58.70 (33.42)
Excused (%), mean (SD)	15.81 (21.16)
Non-Excused (%), mean (SD)	24.18 (30.17)
Living arrangement:	
Both parents, no. (%)	84 (55.3)
Single parent, no. (%)	41 (27.0)
Other/reconstituted family, no. (%)	27 (17.8)
School /teacher worried about the youth's wellbeing, no. (%)	107 (70.4)
Former treatment due to school attendance problems:	
School psychologist, no. (%)	101 (66.4)
Private psychologist, no. (%)	53 (34.9)
General practitioner, no. (%)	108 (71.1)
Pediatric physician, no. (%)	36 (23.7)
Psychiatrics, no. (%)	48 (31.6)
School or teacher, no. (%)	13 (8.6)
Support from the municipality, no. (%)	25 (16.4)
Hypnosis, no. (%)	7 (4.6)
Alternative medicine, no. (%)	7 (4.6)
Other[a], no. (%)	7 (4.6)
Any treatment, no. (%)	152 (100.0)
Youths mental health problems (Parent-reported):	
Anxiety disorder, no. (%)	18 (11.8)
Depressive disorder, no. (%)	8 (5.3)
Attention deficit hyperactivity disorder, no. (%)	9 (5.9)
Attention deficit disorder, no. (%)	7 (4.6)
Autism spectrum disorder, no. (%)	12 (7.2)
Learning disability, no. (%)	10 (6.6)
Intellectual disability, no. (%)	3 (2.0)
Other[b], no. (%)	4 (2.6)
Comorbidity, ≥2 disorders, no. (%)	23 (15.1)
Any disorder, no. (%)	40 (26.3)

Note: SAPs = School Attendance Problems

[a]*Adoption Counseling* (*n* = 1)*, neuropsychologist* (*n* = 1)*, speech therapist (n = 2), private therapist (n = 3)*

[b]*Trauma (n = 2), Tourette (n = 1), Functional Somatic Symptoms (n = 1), Conduct disorder (n = 1)*

Table 5: *Characteristics of parents of youths with SAPs*	
Characteristics	**Parents (N = 152)**
Mother's highest education:	
Primary level of education, 0-10 years, no. (%)	8 (5.3)
Secondary level of education, 11-15 years, no. (%)	105 (69.1)
Tertiary level of education, 16-20 years, no. (%)	39 (25.7)
Father's highest education:	
Primary level of education, 0-10 years, no. (%)	26 (17.1)
Secondary level of education, 11-15 years, no. (%)	87 (57.2)
Tertiary level of education, 16-20 years, no. (%)	39 (25.7)
Both parents reported mental health problems, no. (%)	14 (9.2)
Parent-reported mental health problems: Mothers	
Anxiety, no. (%)	26 (17.1)
Depression, no. (%)	22 (14.5)
ADHD, no. (%)	10 (6.6)
Learning disability, no. (%)	5 (3.3)
OCD, no. (%)	4 (2.6)
Personality disorder, no. (%)	4 (2.6)
Eating disorder	2 (1.3)
Substance abuse, no. (%)	2 (1.3)
Manic-depressive illness, no. (%)	2 (2.0)
Neurodevelopmental disorder, no. (%)	2 (1.3)
Psychosis, no. (%)	1 (0.7)
Other[a], no. (%)	14 (9.2)
Any mental health problems, no. (%)	42 (27.6)
Parent-reported mental health problems: Fathers	
Depression, no. (%)	9 (5.9)
Anxiety, no. (%)	8 (5.3)
ADHD, no. (%)	8 (5.3)
Personality disorder, no. (%)	3 (2.0)
Substance abuse, no. (%)	3 (2.0)
OCD, no. (%)	2 (1.3)
Learning disability, no. (%)	2 (1.3)
Other[b], no. (%)	7 (4.6)
Any mental health problems, no. (%)	22 (14.5)
SAP affecting parents/guardians work in the last four weeks, no (%)	100 (65.8)
Arrived late for work, no. (%)	78 (51.3)
Left work early, no. (%)	86 (43.4)

Note: SAPs = School Attendance Problems

[a]*Stress (n = 6), Post traumatic stress disorder (n = 6), Attention Deficit Disorder (n =1), late effects cancer survivor (n =1)*

[b]*Was not specified by respondent (n = 7).*

5.3. Results

5.3.1. Frequency distribution of School absence

At inclusion, all 152 parents reported that their child had a school absence above 10% in the last three months of school, and the majority of the sample reported having school absence above 30% (*n* = 92). See the frequency distribution of both parent-reported absence and registry-based in *Figure 8.*

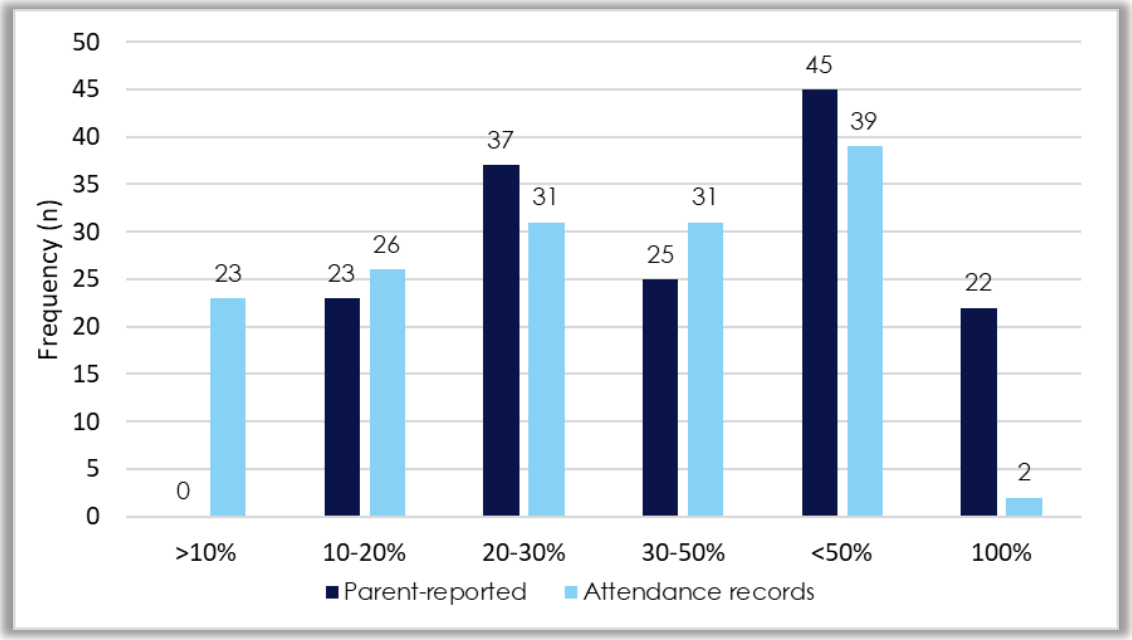


Figure 8. Frequency distribution of youth school absence using parent-reports and attendance records, in the previous three-months of school

5.3.2. Discrepancies in absence measures

As seen in Figure 8, we also discovered discrepancies between the self-reported absence data and the registry-based data. According to the attendance records, 23 participants were absent from school, less than 10% of the time in the last three months. Of these 23 participants, parents reported them to be absent 10-20% (n = 6), 20-30% (n = 5), 30-50% (n = 4), < 50% (n = 7), and 100% (n = 1). In addition, we observed that 22 of the 152 participants had 100% absence as reported by their parents, while only two participants had 100% absence based on the attendance records.

5.3.3. Mean short- and long-term absence

The mean average short-term absence was 34.9% (SD = 25.9), and the long-term school absence was 23.6% (SD = 16.0). Most of the youths' absence was registered as due to illness in both the short- (M = 56.7%, SD = 38.7) and long-term period (M = 58.7%, SD = 33.4). Followed by non-excused (Short-term: M = 25.5%, SD = 33.7, Long-term: M = 24.2%, SD = 30.2) and excused absence (Short-term: M = 14.6%, SD = 26.0, Long-term: M = 15.8%, SD = 21.2). As shown in Figure 9, there was an increase in school absence throughout the last academic year.

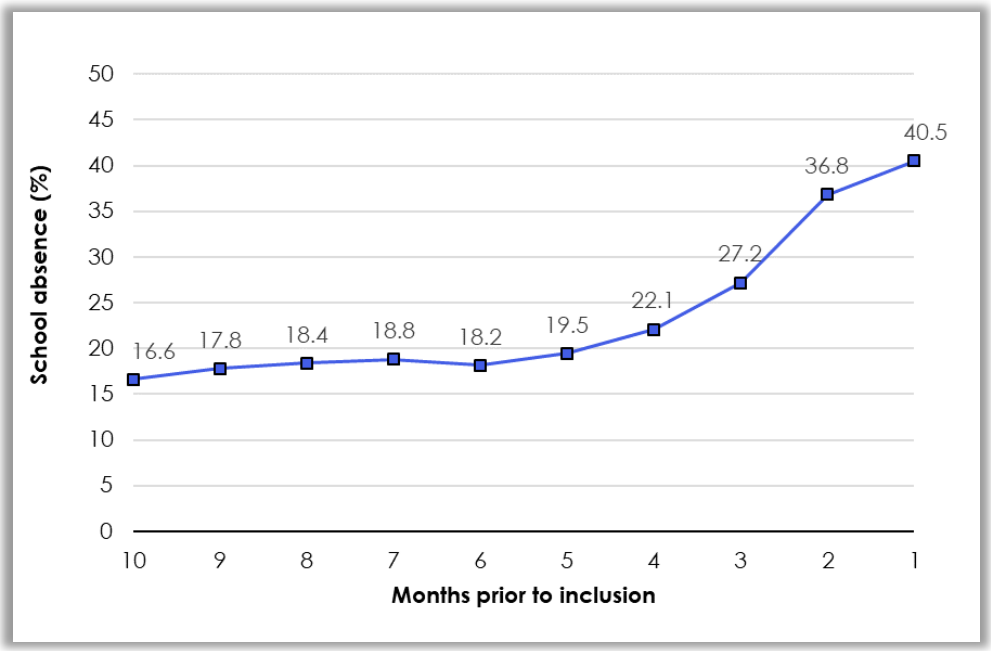


Figure 9. *School absence per month (%) in the previous school year*

5.3.4. Mean comparisons of school absence and absence categories

We compared the means of school absence and absence categories based on a division of gender, age, youth mental health problems, parent mental health problems, living situation, and parent level of education. The age group division of '6-12 years' and '13-17 years' was used to reflect the ages of youths in Danish primary and secondary schools. Youth living situations were divided into either living with both parents or not (i.e., 'Yes' or 'No'). Mental health problems among youths and parents were either reported as present or not (i.e., 'Yes' or 'No'). Mothers' and fathers' level of education was divided into ordinal variables using three levels of education (i.e., Primary education' 0-10 years (e.g., primary or

secondary school), 'Secondary education' 11-15 years (e.g., high school or vocational degree)' and 'Tertiary education' 16-20 years (e.g., masters or doctorate level of education). The comparison showed significant differences in mean school absence and absence categories related to age, living situation, mental health problems, and parental education. The older youths also presented significantly higher levels of non-excused school absence. Short- and long-term absence were significantly higher among youths whose parents reported having mental health problems. Youths living with both parents had significantly lower levels of short- and long-term non-excused absence, and significantly higher levels of long-term excused absence.

5.3.5. Elevated symptoms of emotional and behavioral problems

As shown in Figure 10, there was a large proportion of youths in the SAPs sample who scored within clinical levels on symptoms of anxiety (SCAS), depression (MFQ), and emotional and behavioral (SDQ). The number of youths scoring within the clinical range was as follows: On the SCAS, 37 (40.2%) males and 32 (53.3%) females. On the SCAS-P, 54 (58.7%) males and 48 (80.0%) females. On the MFQ, 28 (30.4%) males and 26 (43.3%) females. On the MFQ-P, 64 (69.6%) males and 41 (68.3%) females. On the SDQ, 35 (38.0%) males and 28 (46.7%) females. On the SDQ-P, 59 (64.1%) males and 37 (61.7%) females. The majority of the sample were rated within the clinical range of at least one of the total scores of SCAS, MFQ, and SDQ by the youths' (n = 92, 60.5%) or the parents' (n = 132, 86.8%). Among the youths, 31 (20.4%) were within the clinical range of only one measure, and 61 (40.1%) rated within the clinical range of two or more measures. The parents rated 24 (15.8%) youths within the clinical range of only one measure, and 108 (71.1%) youths within two or more measures

We also investigated the proportion of youths experiencing clinical levels of interference due to their problems measured on the SDQ-Impact scale. Among the youth-rated SDQ-Impact, a total of 43 (46.7%) males and 37 (61.7%) females scored within clinical levels. On the SDQ-P-Impact scale, 68 (73.9%) males and 47 (78.3%) females were rated by their parents within the clinical level.

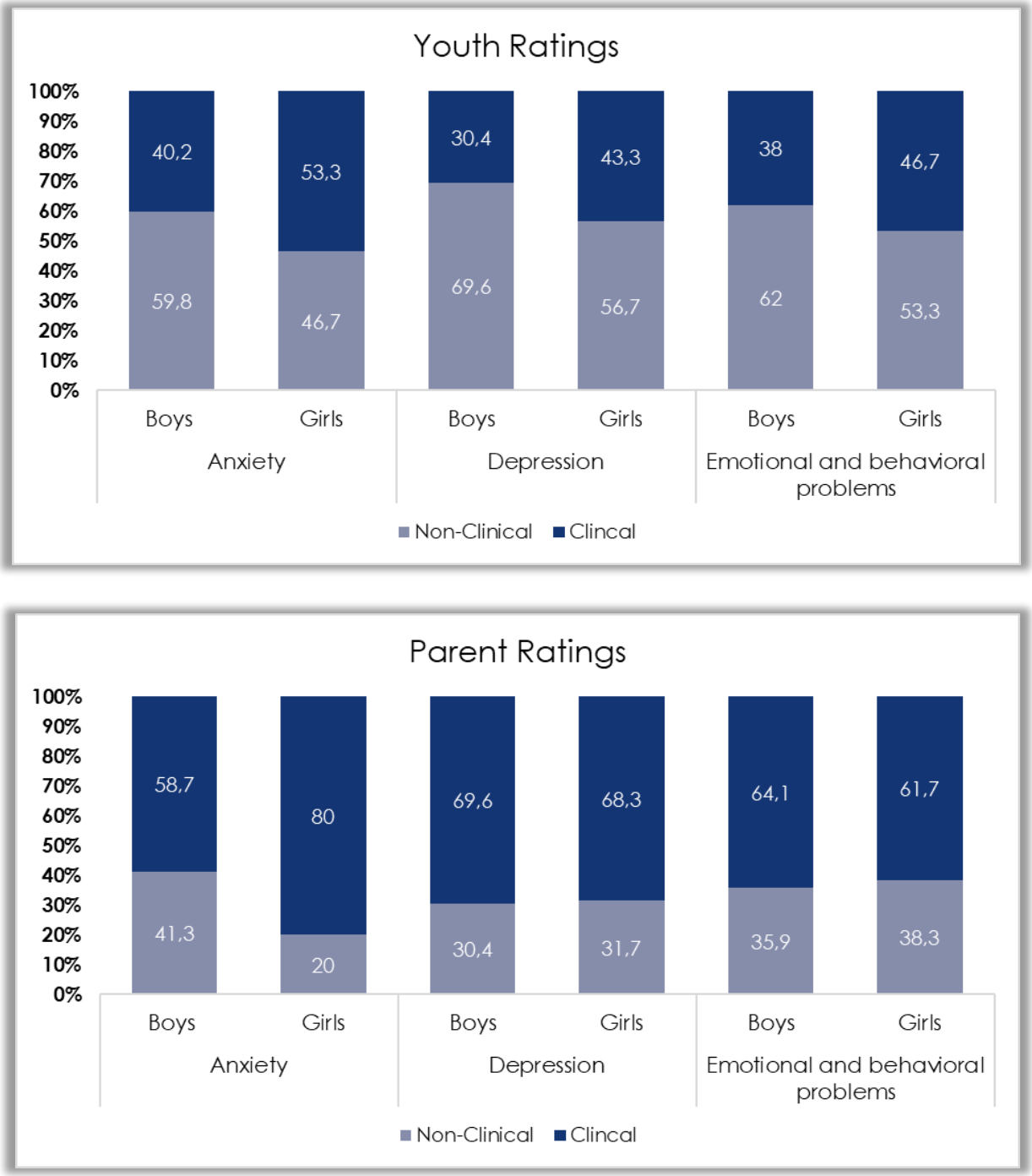


Figure 10. *Percentage of boys and girls with clinical and non-clinical levels of symptoms of anxiety, depression, and emotional and behavioral problems based on youth and parent ratings.*

6. RCT study of the Back2School program (Paper 4)

Authors: Daniel Bach Johnsen, Johanne Jeppesen Lomholt, David Heyne, Pia Jeppesen, Morten B. Jensen, Wendy K. Silverman, and Mikael Thastum,

6.1. Aim and structure

In light of the comorbid mental health problems found among youths with SAPs, more comprehensive intervention approaches that infuse treatment for several mental health problems are needed (Kearney & Graczyk, 2020; Maynard et al., 2018). Previous studies have evaluated treatment protocols designed to treat a range of mental health problems among youths with SAPs, finding promising results related to an increase in school attendance and a reduction in mental health problems (Hannan et al., 2019; Reissner et al., 2015; Walter et al., 2010). However, these studies were limited to youths in an inpatient or intensive outpatient care with confirmed mental disorders, and none of the studies had tested a transdiagnostic CBT treatment design. The primary aim of the current study was to test the effectiveness of the B2S program, using an RCT design with an active control group receiving TAU. We hypothesized that the B2S treatment would be superior to TAU in increasing school attendance, decreasing symptoms of emotional, behavioral, and social difficulties, and increasing youths' and parents' self-efficacy related to SAPs

6.2. Methods

6.2.1. Participants

A total of 204 families were assessed for eligibility. Fifty families were excluded, 19 of which did not meet the inclusion criteria, 24 declined to participate despite their initial interest, and seven were unreachable by phone following the eligibility assessment. One-hundred-fifty-four families met inclusion criteria and were randomly assigned to B2S (n = 75) or TAU (*n* = 79). Two families dropped out prior to Post assessments (B2S: *n* = 1, TAU: *n* = 1). Both families retired their consent to participate in the study. The total number of participants screened for eligibility, and the number of participants included and randomized to each treatment arm are shown in Figure 11. The baseline characteristics are identical to the described characteristics presented in the *Baseline study* (see *Table 4* and *Table 5*).

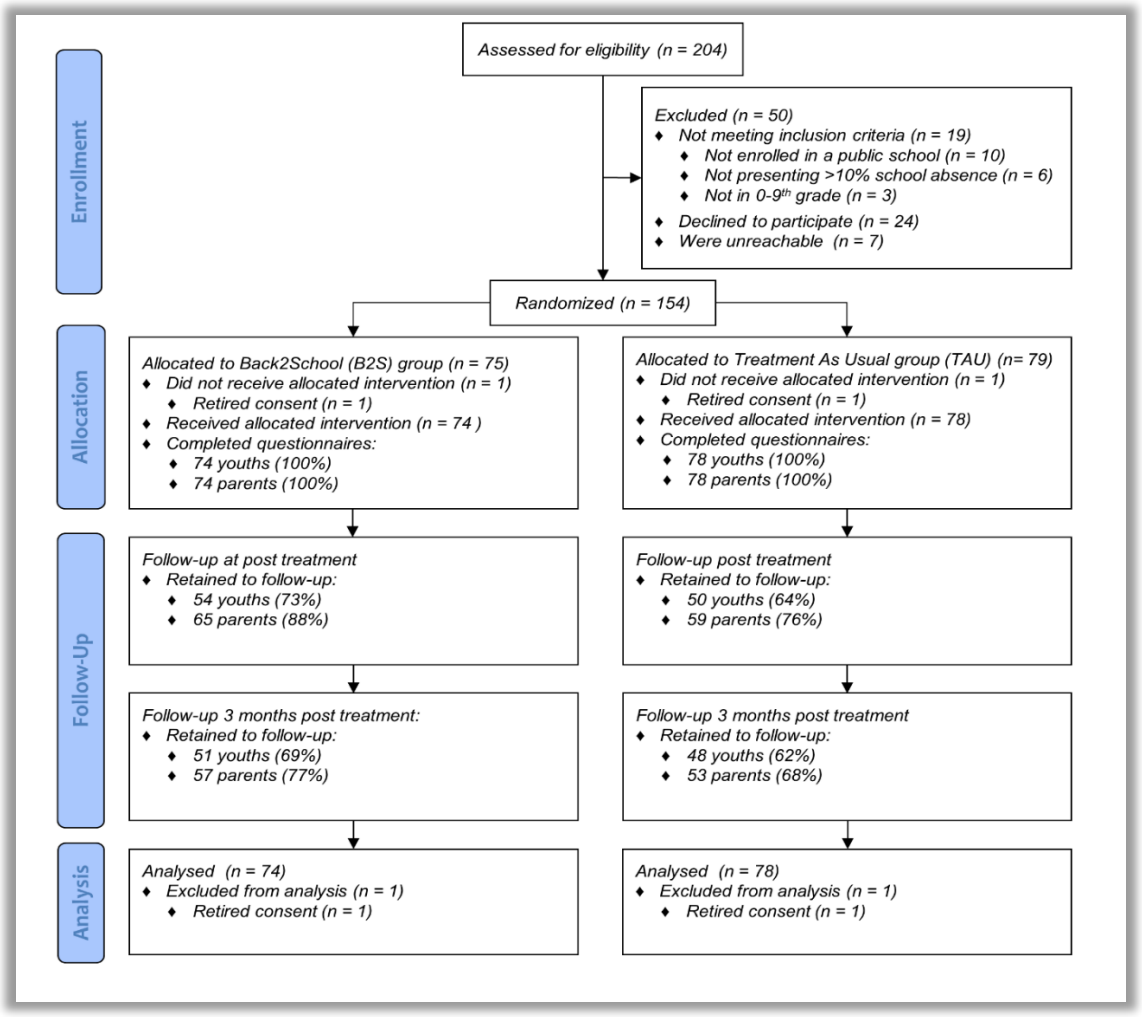


Figure 11. Participant-flow diagram

6.2.2. Enrollment

Participants were recruited between August 2017 and March 2019, with the last follow-up assessment in December 2019. All participating families were self-referred and seeking treatment for SAP. The inclusion criteria were (a) youths enrolled in a public school within the region of central Denmark; (b) aged 6–16 years and in 0–9th grade (excluding the second semester of ninth grade); (c) parents reported more than 10% school absence during the previous three months of school (based on parent-reported information); (d) the youth and at least one of the parents understood and spoke Danish sufficiently to participate in treatment, and complete questionnaires; (e) at least one of the parents were motivated to work on increasing the youth's school attendance; (f) were committed to participating in assessment,

intervention procedures, and accepted random assignment to intervention; and (g) gave written consent provided by the holders of the parental rights. Participants completing the screening procedure (see *Appendix B: Paper 2* and *Figure 6*) and pre-assessment were enrolled and allocated to either the B2S or TAU group.

6.2.3. Treatment allocation

The randomization procedure was performed externally by staff at TrygFonden's Center for Child Research, Department of Economics and Business Economics, Aarhus University, using a computer-generated random digit procedure with two possibilities (B2S and TAU). The primary treatment outcome, increase in school attendance, can be affected by both the age and the severity of school non-attendance among participants (Heyne, Sauter, & Maynard, 2015). Therefore, to ensure balanced groups, the randomization was stratified on the presence of two factors, age (first to fourth grade [younger] or fifth to ninth grade [older]) and amount of school non-attendance (< 50% [low] or > 50% [high]). To maintain similar-sized treatment groups, the randomization was conducted using permuted block randomization, and concealed from the research staff overseeing the RCT study until interventions were assigned. Following randomization to either B2S or TAU, all participants received written and verbal information regarding treatment allocation from the research staff. Participants in the B2S group were notified of the time and place of the B2S treatment start. Participants in the TAU group were urged to contact their school to start treatment, and the associated schools and the school leaders were also notified and informed of the randomization results.

6.2.4. Analysis

Mixed linear models (MLMs) were used to compare treatment groups (i.e., B2S and TAU) over time (i.e., Pre, Post, FU) on all continuous outcome measures. MLMs were used to measure the time × group interaction effects, and the effects of treatment groups over time (for a detailed description, see *Appendix D: Paper 4*).

6.3. Results

6.3.1. Interventions received

6.3.1.1. Back2School

All participating families in the B2S group (n = 74) participated in the clinical assessment. Participating families in the B2S group completed a mean of 10.0 (SD = 2.45, range 0-11) of the treatment sessions and booster session. Fifty-eight (78.4%) families completed all treatment sessions and the booster session. On average, families completed a mean of 3.15 (SD = 1.08, range 0-4) of the four school meetings. Thirty-seven (50.0%) families completed all school-meetings. If the B2S psychologists deemed it necessary, families were offered an extra meeting or treatment session after treatment (e.g., to coordinate future treatment with other professionals, or to ensure the wellbeing of the families). Eighteen families (24.3%) received at least one extra meeting or treatment session, with a mean of 1.7 (SD = 1.2, range 0-5) extra meetings or treatment sessions. The mean number of sessions and meetings received in the B2S treatment was 14.6 (SD = 2.3, range 1-18), and the mean number of hours of intervention received was 15.0 (SD = 3.9, range 1.5-20.6) for the families in the B2S group. From treatment allocation to the last completed treatment session (excluding the booster session), the average treatment time was 4.2 months.

6.3.1.2. Treatment as usual

Sixty (76.9%) families completed the semi-structured interview following treatment, and the remaining families were either unreachable or declined to participate in the interview. The TAU families received treatment or help provided through public services (n = 59, 98.3%) and private services (n = 19, 31.7%). Of the responding families, 56 (93.3%) families reported receiving help from their schools (e.g., school meeting or homeschooling), 41 (68.3%) from their municipality (e.g., meeting with a school psychologist, or social worker), 24 (40.0%) received help provided by region (e.g., psychiatric assessment or inpatient care), and 19 (31.7%) from private providers (e.g., private psychologist, or hypnotists). Participants in the TAU group reported that they, in the period from Pre to Post assessment, received on average a mean of 13.4 hours (SD = 21.6, range 1-116) of intervention (see *Table 6*.).

Table 6. Descriptive information regarding the interventions received in the treatment as usual (TAU) group		
	TAU (N = 60)	
	n (%)	Mean hours (SD)
Received any intervention:	60 (100)	13.4 (21.6)
The number of service providers (i.e., school, municipal, region, or private):		-
One provider	10 (16.7)	-
Two different providers	23 (38.3)	-
Three different providers	24 (40.0)	-
Four different providers	3 (5.0)	-
Public services:	59 (98.3)	11 (22.0)
School services:	56 (93.3)	6.8 (18.6)
School meeting	55 (91.7)	-
Homeschooling	8 (13.3)	-
Special education	2 (3.3)	-
Reduced school schedule	1 (1.7)	-
Municipal services:	41 (68.3)	6.4 (14.9)
Meeting with social worker	21 (35.0)	-
Counseling provided by school psychologist	13 (21.7)	-
Treatment provided by clinical psychologist	7 (11.7)	-
Mentoring program	7 (11.7)	-
Meeting with an official from the municipality	5 (8.3)	-
Enrollment or support from a youth center	5 (8.3)	-
Multisystemic Therapy	2 (3.3)	-
Regional services:	24 (40)	3.3 (2.3)
Psychiatric hospital (assessment or inpatient care)	16 (26.7)	-
Hospital / MD practitioner	13 (21.7)	-
Center for suicide prevention	1 (1.7)	-
Private services:	19 (31.7)	8.5 (8.4)
Private psychologist	14 (21.7)	5.8 (5.6)
Other private interventions:	5 (8.3)	8.5 (9.0)
Physiotherapy	1 (1.7)	-
Hypnotherapy	1 (1.7)	-
Private tutoring	1 (1.7)	-
Post-adoption services	1 (1.7)	-
Cancer survivor support	1 (1.7)	-

Note: The information is derived from a semi-structured interview conducted among parents in the TAU group, assessing the interventions received from Pre to Post.

6.3.2. Primary outcomes

6.3.2.1 Hours of school attendance

There was no significant time × group interaction effects, related to change in the parent-reported hours of school attendance (F = 3.3, p = .07, d = 0.32). There was a significant increase in hours of school attendance from Pre to FU, in both the B2S (F = 25.4, p < .01, d = 0.73) and TAU (F = 11.9, p < .01, d = 0.60) group.

6.3.2.2. Days of school attendance

No significant time × group interaction effects was found, related to a change in days of school attendance (F = 0.4, p = .53, d = 0.08). There was a significant increase in days of school attendance from Pre to FU, in both the B2S (F = 8.5, p < .01, d = 0.54,) and TAU (F = 12.7, p < .01, d = 0.68) group. See Figure 12.

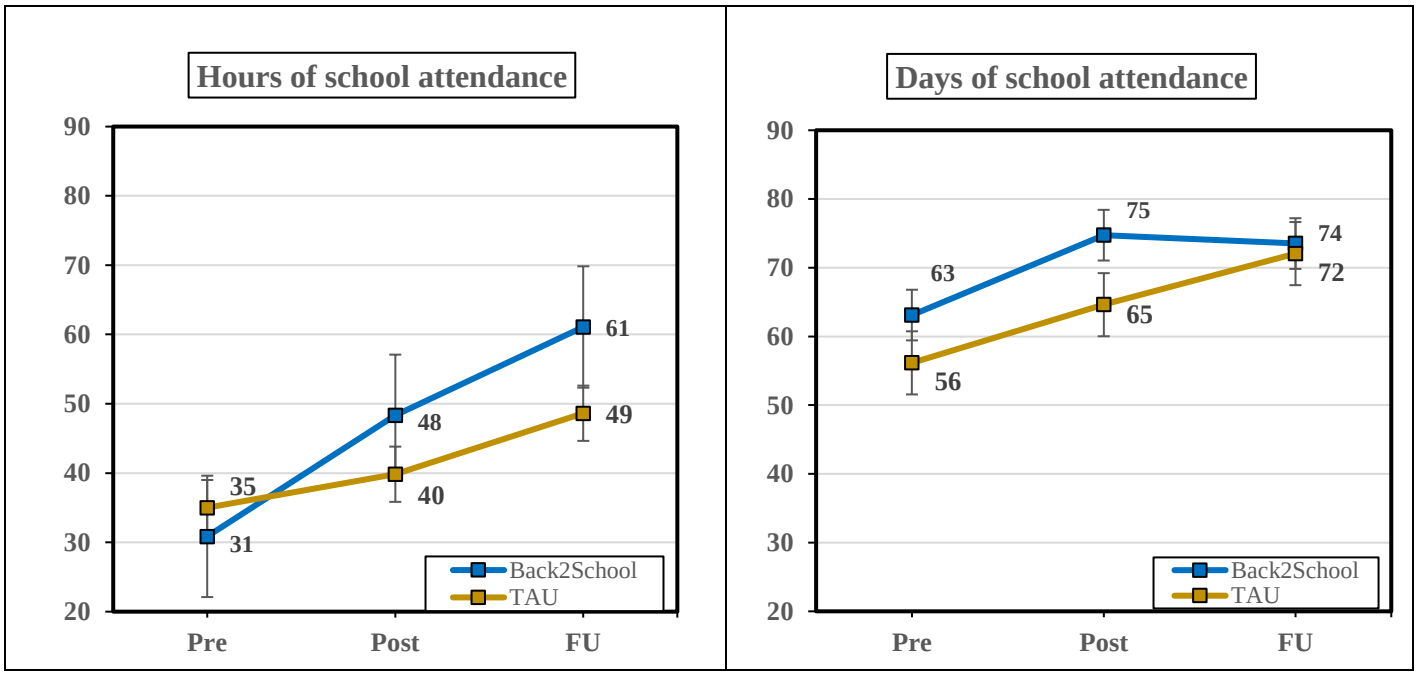


Figure 12. Mean school attendance (%) at Pre, Post, and 3-month follow up

6.3.3. Secondary outcomes

6.3.3.1. Emotional, behavioral, and social difficulties (SDQ and SDQ-P)

There were significant time × group interactions related to the change in difficulties on youth rated SDQ in favor of the B2S group. Significant interactions were found for the total scale (F = 10.51, p < .01, d = 0.58), emotional symptoms (F = 8.10, p < .01, d = 0.51), problems with peers (F = 8.02, p < .01, d = 0.38), and impact scale (F = 4.91, p = .03, d = 0.29). For the parent-reported SDQ-P, there were significant time × group interactions for the total scale (F = 8.71, p < .01, d = 0.47), emotional symptoms (F = 4.33, p = .04, d = 0.35), conduct problems (F = 6.39, p = .01, d = 0.32), and impact scale (F = 4.43, p =.04, d = 0.36). See Figure 13.

6.3.3.2. Self-Efficacy (SEQ-SS and SEQ-RSAP)

There were significant time × group interactions related to change in youth rated self-efficacy, in favor of the B2S group for the total scale (F = 7.63, p < .01, d = 0.46), the academic/social stress scale (F = 7.12, p < .01, d = 0.47), and the separation/discipline scale (F = 4.87, p = .03, d = 0.29). For the parent rated SEQ-RSAP a significant interaction was found (F = 12.43, p < .01, d = 0.53). See Figure 13.

6.3.4. Fidelity and competence assessment

All treatment sessions in the B2S group were video-recorded. Fidelity was assessed using randomly selected videos rating the therapist's competence in conducting CBT, and their adherence to the treatment manual using the Competence and Adherence Scale for Cognitive Behavioral Therapy for Transdiagnostic Modular based Manuals (CAS-CBT-TMM) (Bjaastad et al., 2015; Rasmussen & Puggaard, 2019). Adherence was based on a global rating of adherence, rated on a 7-point scale (0 = None, 6 = Thorough). Competence was based on a global evaluation of competence, rated on a 7-point scale rated on (0 = Poor skills, to 6 = Excellent skills).

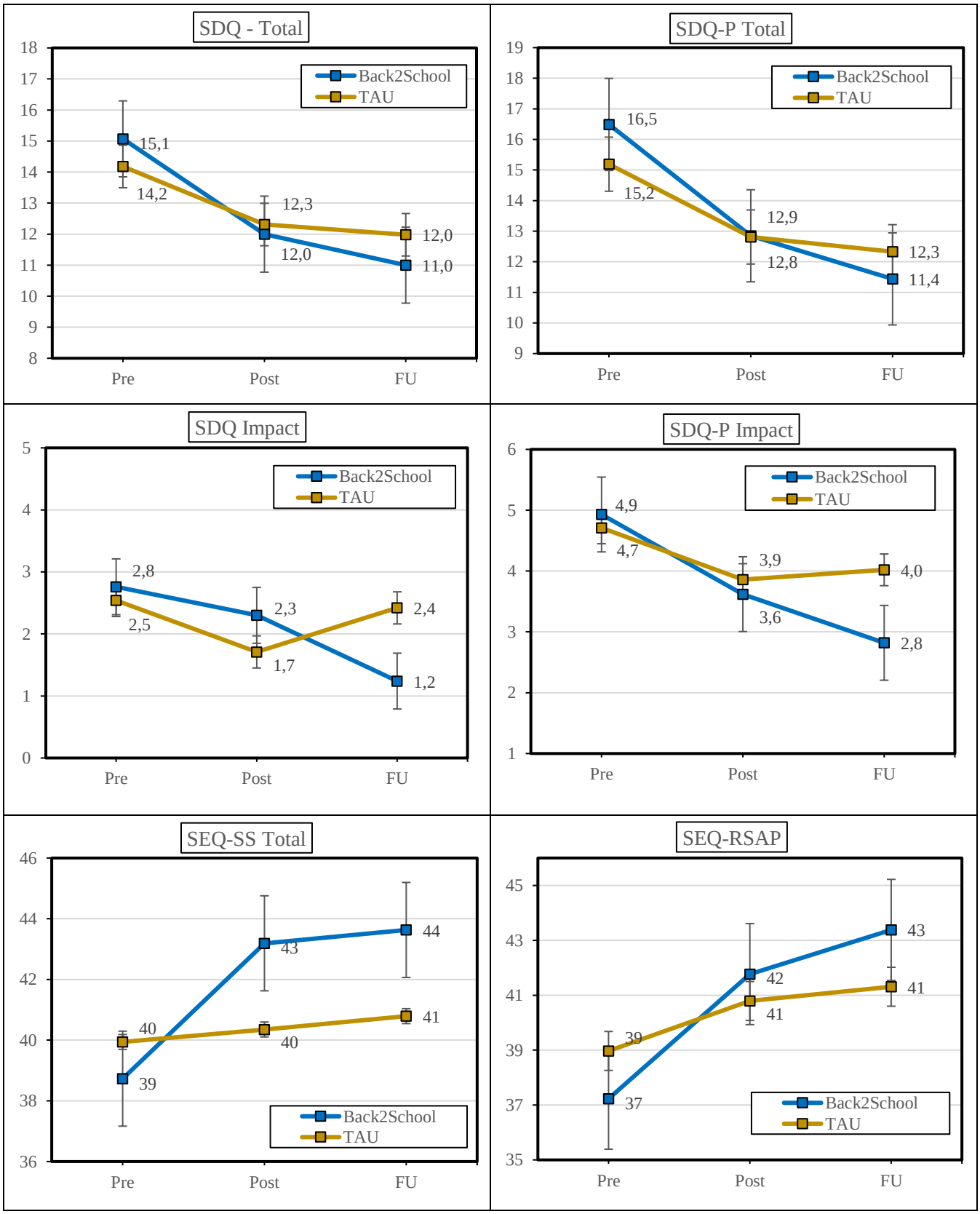


Figure 13. Changes in youth and parent-reported secondary outcomes, divided by treatment group.

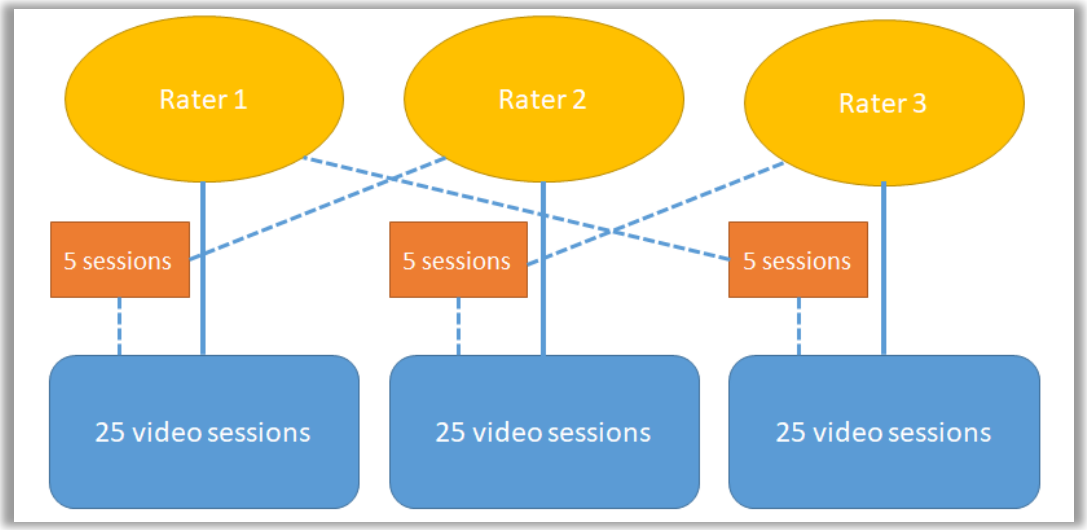


Figure 14. Overview over video ratings, including the total number of videos (i.e., 25 videos) and inter-rater videos (i.e., 5 videos) for each assessor.

In total, 25 (33.8%) of the 74 participants receiving B2S treatment were randomly selected for the fidelity assessment. For each participant, three sessions were randomly selected from their treatment; one session from early treatment (i.e., session 1-3), one session from mid-treatment (i.e., session 4-6), one session from late treatment (i.e., session 7-10). In total, 75 sessions (out of 740 completed sessions) were randomly selected and used in the assessment of treatment fidelity. The assessment was conducted by three trained raters. The raters had received training in the rating scale (CAS-CBT-TMM) in the MindMyMind RCT study and received two days of introduction to the B2S manual and training in rating B2S sessions. The raters assessed 25 randomly selected sessions each, and also five videos randomly selected from another rater to be used as a measure of inter-rater reliability (15 videos were used), see Figure 13 for an overview.

The mean global score of adherence was 3.49 (SD = 1.28) for therapist adherence and 3.28 (SD = 1.30) for therapist competence. The accuracy of the inter-rater reliability was calculated using intraclass correlations (ICC) and showed good agreement for ratings of adherence (ICC = .633) and competence (ICC = .620) (Cicchetti, 1994).

6.5.5. Treatment satisfaction

Based on the parents' responses on the *ESQ* in the B2S (*n* = 65/74) and TAU (*n* = 58/78) group, parents in the B2S generally rated the statements relating to treatment satisfaction higher than the parents in the TAU group (see Table 7 and Figure 15). The B2S mean parent-ratings for the ESQ were also significantly higher (*M* = 16.28, *SD* = 3.57) compared to mean parent-ratings in the TAU (*M* = 9.50, *SD* = 4.92) group ($t(103) = 8.65$, $p < .01$).

6.5.5.1. Adverse effects

None of the parents in the B2S group responded '*certainly true*' to the statement that the treatment had caused their child to feel worse, while 3/58 parents in the TAU group responded '*certainly true*' to the statement that the treatment had caused their child to feel worse. One (*n* = 1/65) parent in the B2S group and 2/58 parents in the TAU group responded '*certainly true*' to the statement that the parent was feeling worse due to the received treatment.

Table 7. Parent-reported responses related to treatment satisfaction measured on the ESQ

Item	Group B2S, *n* = 65 TAU, *n* = 58	Response category, *n* (%)		
		Not true	Partly true	Certainly true
The treatment we received helped my child.	B2S	8 (12.3)	21 (32.3)	36 (55.4)
	TAU	27 (46.6)	22 (37.9)	9 (15.5)
The treatment helped me as a parent.	B2S	3 (4.6)	16 (24.6)	46 (70.8)
	TAU	27 (46.6)	19 (32.8)	12 (20.7)
If a friend needed similar help, I would recommend this treatment.	B2S	4 (6.2)	5 (7.7)	56 (86.2)
	TAU	21 36.2)	20 (34.5)	17 (29.3)
I felt adequately informed of the purpose, goal, and the course of the treatment	B2S	2 (3.1)	8 (12.3)	55 (84.6)
	TAU	25 (43.1)	20 (34.5)	13 (22.4)
Our family benefitted positively from the treatment.	B2S	11 (16.9)	23 (35.4)	31 (47.7)
	TAU	28 (48.3)	24 (41.4)	6 (10.3)
Due to the treatment received, I am able to change my behavior towards my child in a positive way.	B2S	8 (12.3)	28 (43.1)	29 (44.6)
	TAU	32 (55.2)	21 (36.2)	5 (8.6)
Due to the treatment, I achieved a better understanding of my child's mental state and wellbeing.	B2S	13 (20)	26 (40)	26 (40)
	TAU	32 (55.2)	19 (32.8)	7 (12.1)
I trusted the therapists/service providers conducting the treatment.	B2S	1 (1.5)	4 (6.2)	60 (92.3)
	TAU	16 (27.6)	23 (39.7)	19 (32.8)
The treatment made my child feel worse after treatment.	B2S	57 (87.7)	8 (12.3)	0 (0)
	TAU	47 (81.0)	8 (13.8)	3 (5.2)
The treatment made me feel worse as a parent after treatment.	B2S	63 (96.9)	1 (1.5)	1 (1.5)
	TAU	49 (84.5)	7 (12.1)	2 (3.4)

Note: ESQ = Experience of Service Questionnaire, B2S = Back2School, TAU = Treatment as Usual

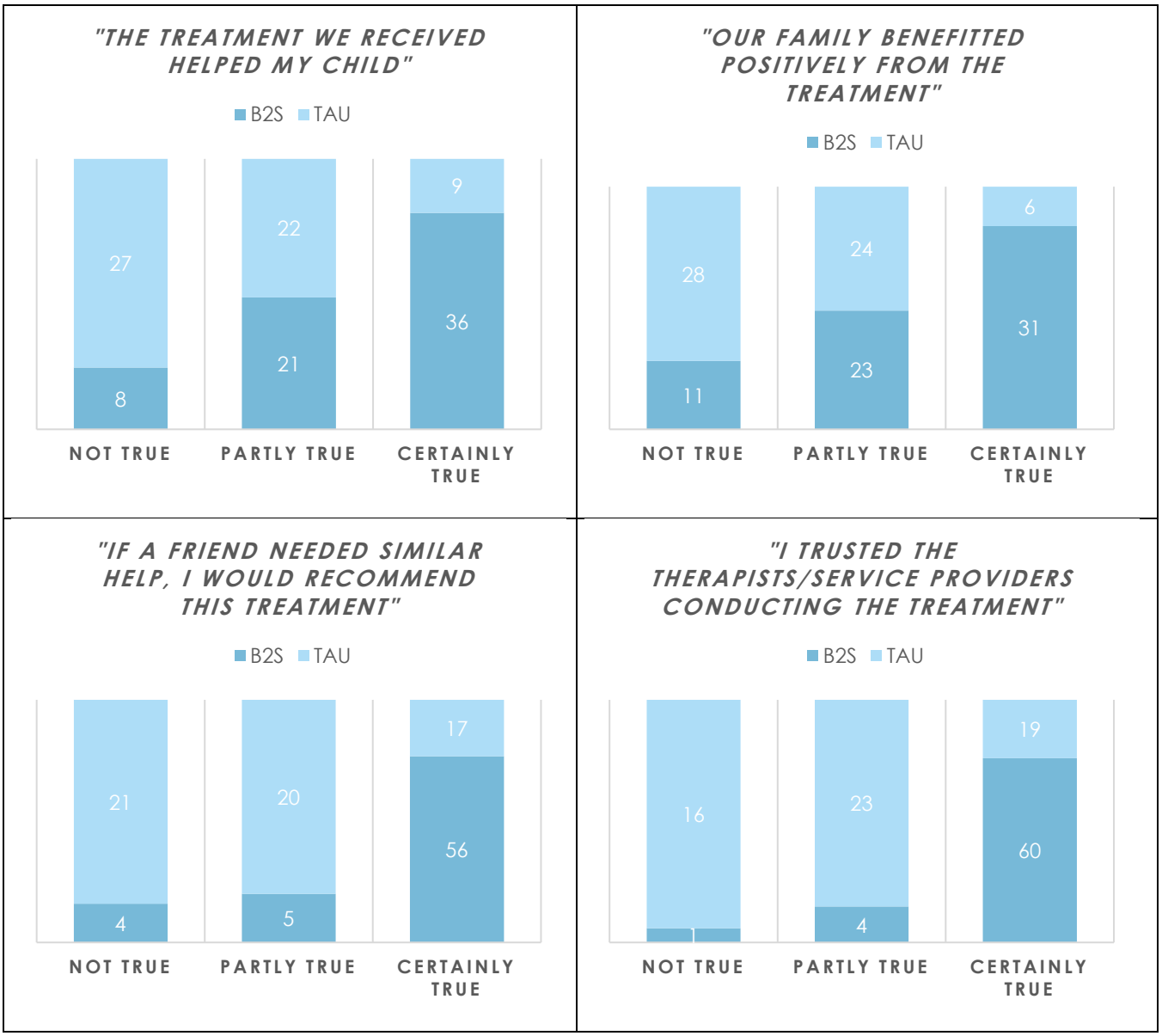


Figure 15. Parent-reports on statements related to treatment satisfaction in the Back2School group and the Treatment as Usual group.

7. Implications of the overall findings

The current doctoral thesis presents the results from four papers, derived from the Back2School project. The collective findings from these papers expand our knowledge and understanding related to the descriptive characteristics of youths with SAPs, and the treatment of these youths. Furthermore, it outlines the evaluation and effect of the new transdiagnostic modular CBT treatment aimed at treating youths with SAPs.

7.1. Feasibility of the Back2School program

The findings from the feasibility study (Paper 1: Lomholt et al., 2020), presented the first examination of the B2S program. The study highlighted key findings related to the recruitment of youths with SAPs, their presenting mental health problems, the treatment acceptability, the preliminary treatment outcomes of the B2S program, and limitations related to the school attendance data.

The feasibility study used a broad inclusion criterion of '≥ 10% parent-reported school absenteeism in the previous 3-months' to identify youths with SAPs, unlike previous SAP treatments studies (Hannan et al., 2019; Melvin et al., 2016; Reissner et al., 2015) who use the presence of mental health problems as an inclusion criterion. However, despite the use of a low threshold of absence, most of the youths presented high levels of school absence and high scores of levels of symptoms of anxiety and depression. These findings suggested that the parent-reported school attendance functioned well to identify youths with SAPs and that there was a demand for psychological treatment among youths with SAPs in the municipality.

The sociodemographic characteristics of the sample recruited for the feasibility study showed that the youths included in the feasibility study presented a wide range of different mental health problems. The problems were predominantly related to anxiety, depressive, or behavioral disorders, which was appropriate as the B2S and MMM manuals were designed to encompass treatment for these problems.

Furthermore, the feasibility study was the first study, based on empirical data, to call attention to limitations related to the Danish school attendance registries, which were used in the Back2School

project. This finding proved to be important in preparation for the later RCT study (Paper 4), as we developed and included a parent-reported school absence measure to be used as an additional primary measure (section 4.4.). These findings also lead to a closer examination of the discrepancies in the baseline study (Paper 3: Johnsen et al., 2020a).

The initial study of the feasibility of the B2S program found overall high participation rates as well as high levels of satisfaction with the program, which were maintained one year after the intervention. Preliminary evaluation of the intervention outcomes showed a significant increase in school attendance and a decrease in psychological symptoms, as well as a significant increase in self-efficacy for both youth and parents. The B2S program was, therefore, viewed as a feasible treatment for youths with SAPs.

7.2. The characteristics of the youths with SAPs

The examination of the baseline characteristic of the large RCT sample presented several exciting findings, and implications emerged from the study (Paper 3: Johnsen et al., 2020a).

The level of school absence was found to increase during the previous academic year, and rapidly in the three months prior to inclusion, and youths with mental health problems were likely to have higher levels of school absence in the previous academic year (section 5.3.2.). These findings highlighted the need to address school absence early to prevent a further increase in absence over time, thus supporting interventions like the B2S program, that can be initiated quickly based on youths' presenting SAPs.

Another important finding was the discrepancies found between the self-reported absence data and the registry-based data (section 5.3.1.). One possible explanation for these discrepancies is that the parents' over-reported youths' school absence and that the attendance records underestimated or falsely reported school absence, as previously found by Keppens et al., (2019). Another explanation for the observed discrepancies could be related to how the schools registered students' absence. According to Danish law, public schools are obliged to register students' days of absence and not their days of attendance (Danish Ministry of Children and Education, 2019). Consequently, when an absent student is not registered as absent, he or she will be automatically registered as having attended school, possibly

deflating the number of absences among youths. The identified discrepancies between school absence as reported by parents and absence from municipality attendance records raises issues regarding the reliability and validity of attendance records in general, and Danish attendance records in particular.

Our findings related to school absence and absence categories (section 5.3.3.) highlight some issues related to economic sanctions following student school absence. Some countries (e.g., in the UK and Denmark; Danish Ministry of Children and Education, 2019; Department for Education, 2015) use economic sanctions related to extensive amounts of non-excused school absence. The current findings suggest that these economic sanctions are more likely to occur in families where parents have lower levels of education. Economic sanctions could lead to further socioeconomic disparities as lower levels of education have been linked to low-income families (De Gregorio & Lee, 2003). Thus, they should be used with caution, as sanctions are more likely to affect low-income families and possibly lead to socioeconomic disparities in society.

Mental health problems were prevalent for both mothers and fathers, and youths who had at least one parent reporting mental health problems were more likely to have higher levels of long- and short-term school absence (section 5.3.3.). These findings suggest that when mental health professionals are working with youths with SAPs, they should screen youths for mental health problems and also gather information regarding parents' mental health problems. The high proportion of youths with clinical levels of one or more different mental health problems (section 5.3.4.), highlights the need for interventions that can encompass complex and comorbid mental health problems, like the B2S program.

7.3. Effectiveness of the Back2School program

In terms of the primary outcome of school attendance, there was no significant time (i.e., pre, post, and 3-FU) × group interaction effect between the B2S and TAU treatment group related to change in the hours (i.e., parent-reported) or days of school attendance (i.e., registry-based). These findings did not support our initial hypothesis, expecting a significant benefit to the B2S treatment in the increase of school attendance, compared to TAU. Both the B2S and TAU groups showed a significant increase in both hours and days of school attendance from pre to 3-month follow-up. Our findings were similar to

those presented by Reissner and colleagues (2015), following their RCT study targeting SAPs among youths with co-occurring mental health problems. They also found an increase in school attendance in both groups. Still, no significant benefit of the multimodal SAP treatment in the increase of school attendance, compared to their TAU condition.

Related to the secondary measures of 'emotional, behavioral, and social difficulties' (i.e., SDQ and SDQ-P) and 'self-efficacy' (i.e., SEQ-SS and SEQ-RSAP), there were several significant time × group interaction effect between the B2S and TAU treatment group. The youths in the B2S group showed significantly larger reductions on several sub-scales on the SDQ (i.e., emotional, impact, and total) and the SDQ-P (i.e., emotional, conduct, impact, and total). There was also a significant advantage in the B2S group compared to the TAU group in the increase on all scales and sub-scales of self-efficacy (i.e., SEQ-SS and SEQ-RSAP). Thus, the current evaluation of the B2S program's effectiveness provided partial support to our initial hypothesis regarding improvement in the secondary outcomes. These results further support previous findings related to an increase in self-efficacy and well-being among youths following CBT treatments for youths with SAPs (Heyne et al., 2002; Melvin et al., 2016; Reissner et al., 2015).

The findings from the current study need to be considered in light of the interventions received in the two treatment groups. The TAU group received a wide range of treatments and interventions from public and private service providers, close to the mean hours received in the manualized B2S treatment. The specific contents of each intervention received in the TAU interventions received are unknown to us. However, per Danish law, public schools are obliged to, in collaboration with the parents, help youths attend school and receive their compulsory education (Danish Ministry of Children and Education, 2017). This obligation is reflected in the large proportion of youths receiving interventions provided by the schools (*n* = 56/60). We, therefore, expect that many youths and families in the TAU group received interventions from schools that predominantly focused on increasing youths' school attendance, complying with Danish law. Conversely, the youths in the B2S group received a therapeutic intervention working systematically to both increase school attendance, and reduce symptoms of anxiety, depression, and behavioral problems. The possible difference between the two received interventions could,

therefore, explain why there were no significant between-group effects found related to school attendance, while several between-group effects were found for the secondary outcome measures.

Another noteworthy finding is the significantly higher rated mean treatment satisfaction reported by the parents in the B2S group compared to the parents in the TAU group. And when looking at some of the individual items of the ESQ (see *Figure 14*), the majority of the parents answered "*certainly true*" related to the statements *"The treatment we received helped my child*" and "*Our family benefitted positively from the treatment"* while the majority of the TAU group reported "not true" to the same statements. Similar findings were also found for the statements *"If a friend needed similar help, I would recommend this treatment"* and *"I trusted the therapists/service providers conducting the treatment"*. These findings highlight that those receiving B2S were generally satisfied with the treatment received, and suggest that the parents in the TAU group were to a higher degree unsatisfied with the treatment received.

An interesting finding was that although most youths in the TAU group receive intervention from public service providers (n = 59/60), a notable proportion (*n* = 19/60) sought help from private providers, such as treatment from private psychologists (*n* = 14/60, *M* = 5.8 hours, *SD* = 5.6). The considerable proportion of TAU participants seeking treatment from private providers could suggest that the available public services were, in some instances, not readily available due to high demand or was insufficient to meet the needs of the youth and families.

There are also limitations related to the current study that needs to be considered when interpreting the findings. The first and most central limitation is related to the utilized school attendance measures, as both the self-reported and registry-based school attendance data are subjected to biases (Keppens et al., 2019; Stone et al., 2000). As seen in both the feasibility study (Paper 1: Lomholt et al., 2020) and the baseline study (Paper 3: Johnsen et al., 2020a), discrepancies were found between parent-reported and registry-based attendance data in a previous retrospective examination of the current sample's school attendance (i.e., three months of school, prior to inclusion). The possible biases related to both parent-reported and registry-based school attendance, suggesting that the results pertaining to school attendance needs to be interpreted with caution.

Another limitation is related to the TAU comparator, as the current TAU interventions could be viewed as an active set of interventions that adapt to new theoretical influences (Löfholm, Brännström, Olsson, & Hansson, 2013), such as the B2S program. This possible adaption of new techniques could partly explain the paucity of main effects found in the current study. Both the psychologists conducting the B2S treatment and the B2S school-meetings could have attributed to an improvement in interventions received in the TAU group. The psychologists worked only part-time on the B2S project and were concurrently working as school-psychologists in the municipalities during the study period. However, the psychologists in the B2S group were instructed to refrain from using treatment elements from the B2S program in their work as school psychologists, possibly influencing the treatment provided for youths in the TAU group. This could also be said for the school involved in the B2S school meetings. Thirty of the 44 different schools involved in the study had youth enrolled from both the B2S and TAU group, and the content and procedures from the B2S school meetings could potentially have affected improvements in the TAU group.

The psychologist conducting the B2S treatment were considered novices in conducting CBT treatment. However, through a short training and introduction to CBT treatment and the treatment manuals, coupled with weekly supervision, the youths in the B2S group showed positive improvements related to both school attendance and in symptoms of mental health problems. Viewed in light of the acceptable measures of competence and adherence (section 6.3.4.) (Bjaastad et al., 2016), these findings propose that with proper training and supervision, the B2S treatment could be administered successfully by non-clinical experts in an outpatient setting.

7.4. Concluding remarks and future directions

The present doctoral dissertation presents the first evaluation of the Back2School program, a transdiagnostic CBT outpatient treatment for youths with SAPs tested using an RCT design (Paper 4: Johnsen et al., 2020b). This evaluation was initiated by a thorough examination of the feasibility of the B2S program (Paper 1: Lomholt et al., 2020), which lead to changes and improvement in the B2S program and RCT protocol (Paper 2: Thastum et al., 2019). Also, a detailed examination of the sample

characteristics and school absence among youths included in the RCT study was conducted (Paper 3: Johnsen et al., 2020a).

In conclusion, the presented findings show a large sample of Danish help-seeking youths with SAPs. They exhibited high levels of school non-attendance, high levels of emotional and behavioral symptoms, and considerable impact on their functioning. The majority of the sample presented symptoms of mental health problems within a clinical range. Compared with a TAU control group, the B2S treatment did not confer a significant benefit in the increase of school attendance. However, the B2S group showed a significant advantage compared to the TAU group in reducing youth- and parent-rated emotional, behavioral, social difficulties (SDQ), and self-efficacy. These positive outcomes suggest that the B2S treatment can positively affect both youths' and parents' well-being and self-efficacy related to handling their SAPs.

In closing, there are still gaps in our knowledge regarding youths with SAPs and the treatment of SAPs, which could guide future studies. The present papers did not include youths with all types of SAPs. As all the included families were self-referred, we most likely did not include cases of SW, a type of SAP characterized by parents willfully keeping their child at home or exerting little effort to get their child to attend school (Heyne, Gren-Landell, et al., 2019). These parents are unlikely to refer themselves to a program like B2S, and the characteristics of youths and parents for whom SW applies, remain understudied and need to be assessed in future studies. The identified discrepancies between the parent-reported and registry-based school attendance could hopefully be a starting point to re-evaluate the registration processes in Danish public schools, as well as attendance registrations in other countries. Future studies should be conducted to optimize and improve the accuracy of the monitoring of school attendance and the identification of SAPs. Finally, given the non-significant difference between the B2S and TAU group in the change in school attendance, future studies should focus on a delineation of the factors with predictive value for successful treatment outcomes in the B2S treatment, as well as subgroup analysis. Identifying what works in the B2S program and for whom, could ultimately improve the B2S treatment, and the treatment effects related to school attendance.

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9. Appendices

Appendix A

Paper 1

Lomholt, J. J., Johnsen, D. B., Silverman, W. K., Heyne, D., Jeppesen, P., & Thastum, M. (2020). Feasibility Study of Back2School, a Modular Cognitive Behavioral Intervention for Youth With School Attendance Problems. Frontiers in Psychology, 11(April), 1–15.

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Feasibility Study of Back2School, a Modular Cognitive Behavioral Intervention for Youth With School Attendance Problems

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There is large heterogeneity among youth with school attendance problems (SAPs). For this reason, protocols for the treatment of SAPs need to be flexible. Back2School (B2S) is a new manual-based, modular transdiagnostic cognitive behavioral intervention to increase school attendance among youth with SAPs. It also aims to increase the self-efficacy of these youth and their parents. B2S includes evidence-based modules addressing youth anxiety, depression, and behavior problems, together with modules focused on parent guidance and school consultation. The current study examined the feasibility of evaluating B2S in an randomized controlled trial and acceptability of the B2S program in a non-randomized trial, including both qualitative and quantitative data, in preparation for a randomized controlled trial of its effectiveness. Youth, parents, and teachers completed questionnaires at baseline, post-intervention, and follow-up. School attendance data were collected from school registers. Twenty-four youth with a SAP (defined as more than 10% absenteeism during the last 3 months) were recruited from primary and lower secondary schools in Aarhus Municipality, Denmark. Their parents also participated in B2S. Two of the 24 families withdrew during the intervention, after sessions two and six respectively. Of the remaining 22 families, 19 (86%) completed all 10 sessions. Parents and youth rated their satisfaction with B2S as high, and high levels of satisfaction were maintained 1 year after the intervention. Teacher satisfaction was lower than that of youth and parents, but the majority found the school's participation in the intervention helpful. Preliminary evaluation of intervention outcomes showed significant increase in school attendance and decrease in psychological symptoms, as well as a significant increase in self-efficacy for both youth and parents. Based on this feasibility data, adaptations were made to the B2S manual and study procedures prior

to commencement of a randomized controlled effectiveness trial. The main adaptation to the manual was to increase school consultation. The main procedural adaptation was to broaden recruitment. Furthermore, it was necessary to increase level of staffing by psychologists because treatment delivery was more time consuming than expected.

Keywords: Back2School, school attendance problems, cognitive behavioral therapy, transdiagnostic, feasibility, acceptability, youths

INTRODUCTION

The school context is important for youths' academic development and the development of their social-emotional competencies (Kearney and Graczyk, 2014). School absenteeism has a negative impact on development in these areas (Carroll, 2010; Gottfried, 2014). Long-term school absenteeism increases a youth's risk of early school dropout, which increases the risk of employment, financial, social, and health issues in adulthood (Attwood and Croll, 2006; Christle et al., 2007; Kearney, 2008b).

In the United States and United Kingdom there has been an increase in the number of students with chronic absenteeism (i.e., more than ten percent; Chang et al., 2018; Department for Education, 2019). The increase in absenteeism is also seen in Danish schools. On average, Danish students in elementary and lower secondary school are absent from school 12 days each school year (six percent of school days), representing an increase since 2014/2015 of one whole day of absenteeism (Undervisningsministeriet, 2018). More specifically, there has been a decrease in lower levels of absenteeism (i.e., 0–2% absenteeism) and an increase in higher levels of absenteeism (i.e., more than 10% absenteeism during a school year) (Undervisningsministeriet, 2018).

School attendance problems (SAP) encompasses different types of problematic school absenteeism. There is large heterogeneity among youths with SAPs, whereby etiology, associated psychopathology, and presentation vary according to the type of SAP (e.g., Kearney, 2008a; Heyne et al., 2019). Customarily, interventions to improve school attendance have focused on one specific type of SAP, such as school refusal alone or truancy alone. Moreover, the effectiveness of these interventions has mainly been examined in small-scale studies or without a randomized controlled design (Maynard et al., 2013, 2015).

A functional approach has been developed to address the heterogeneity associated with SAPs. It involves identifying the motivational function of a youth's SAP, including two motivational functions referring to negative reinforcement such as avoidance of school-based situations or escape from aversive social and evaluative situations, and two motivational functions referring to positive reinforcement such as pursuit of attention from significant others or outside school (Kearney and Silverman, 1993). The functional approach attempts to covers all youth with problematic absenteeism and are linked to an assessment covering both the form and function of SAPs as well as providing treatment strategies targeting different reasons for SAPs. "When Children Refuse School" comprises interventions for absenteeism based on this functional approach, with four protocols to address the four motivational functions (Kearney and Albano, 2007). The strength of the program is the focus on different functions of SAPs. However, the program does not involve interventions at the school.

An intervention which is relevant for different types of SAPs needs to be flexible, containing intervention components most relevant to those different types. There are several risk factors for SAPs related to contexts of the youth as the family context and school context (Kearney, 2008b). These contexts are therefore relevant to take into account in an intervention for SAPs.

Studies have found significant associations between youth with SAPs related to school refusal and internalizing symptoms and emotional disorders (Bools et al., 1990; Egger et al., 2003). For youth with SAPs classified as truancy an association with externalizing problems has been found including a higher frequency of conduct disorder (Bools et al., 1990; Egger et al., 2003; Vaughn et al., 2013). However, despite the link between school refusal and internalizing behavior, depression-related internalizing behavior is not only linked to youth with school refusal, as a link between truancy and depression has been found as well (Roeser et al., 1998; Egger et al., 2003; Heyne et al., 2019).

We developed the Back2School program (B2S; Thastum and Arendt, 2017) which is a modular transdiagnostic CBT intervention aimed at increasing school attendance and decreasing anxiety, depression, and/or behavior problems among youth with SAPs. B2S has a systemic approach involving both the family and the school in the program, Improvement in youth self-efficacy for school-related situations is also targeted in the B2S program because low self-efficacy appears to be related to SAPs (Heyne et al., 1998; Maric et al., 2013; Mann et al., 2015) and an increase in self-efficacy may have a positive impact on school attendance (Heyne et al., 2015).

Aim

The objectives of the current study were to examine the feasibility of evaluating B2S in an RCT and acceptability of the B2S program in a non-randomized trial, including both qualitative and quantitative data. The results would be used to inform a subsequent randomized controlled trial (RCT) of the efficacy of the B2S program. A feasibility study provides valuable information about improvements that may need to occur before initiating a larger RCT, thereby improving the quality and integrity of the RCT (Orsmond and Cohn, 2015). The feasibility of evaluating B2S in an RCT was examined with respect to: recruitment capability and the resulting sample characteristics; data gathering procedures, including the suitability of selected outcome measures based on response rate and comprehension level; the acceptability of the intervention

and study procedures; and the resources needed to implement the study and intervention. The feasibility study also served as a preliminarily evaluation of the impact of the intervention. In these ways, the current study followed the model for feasibility studies as proposed by Orsmond and Cohn (2015). In their review of methods associated with feasibility studies, they identified five overarching objectives, which we have also adopted, namely the evaluation of: recruitment capability and resulting sample characteristics; data collection procedures and outcome measures; acceptability of the intervention and study procedures; ability to manage and implement the study and its intervention; and initial responses to the intervention.

MATERIALS AND METHODS

Participants

We estimated that 24 families would need to be included in the feasibility study to ensure that all five therapists and 12 co-therapists could gain experience delivering the B2S program with at least two cases. Thus, the current sample consisted of 24 youths with SAPs, and their parents. Inclusion criteria for the participating youths were: (1) enrollment in a public school within Aarhus Municipality; (2) aged 7–16 years and in 0–9th grade (excluding second semester of ninth grade); (3) parent reported more than 10% school absenteeism during the last 3 months of school; (4) the youth and at least one of the parents understood and spoke Danish sufficiently to complete questionnaires and participate in the intervention; (5) commitment from both the youth and at least one parent to participate in assessment and intervention procedures; and (6) written informed consent provided by the holders of the parental rights and responsibilities. Regarding the first criterion, private schools were not included because within Aarhus Municipality private schools are outside the municipality's jurisdiction, rendering school absenteeism data unavailable. Regarding the second criterion, youth in their second semester of ninth grade were excluded because this is the final semester in Danish public schools, after which Aarhus municipality cannot provide absenteeism data.

Procedure

The study was conducted in collaboration between Aarhus University and Aarhus Municipality, Denmark. The intervention was managed by the Center for Psychological Treatment for Children and Adolescents (CEBU) at Aarhus University. The feasibility study was conducted in the spring of 2017.

The families were required to make initial contact with CEBU to participate in the study. Prior to the start of the study, the municipality implemented widespread and extensive information campaigns aimed at families and professionals within the municipality. The suitability of each family, with respect to study inclusion criteria, was initially assessed by the first or last author based on a brief e-mail sent by the family. The email described the youth's problems regarding school attendance, as well as an estimate of the youth's absenteeism from school during the last 3 months. Families deemed eligible received information about the project verbally (by telephone) and then in written form by mail. All parents signed an informed consent form for participation. Included in the consent was permission for the investigators to contact the school and involve the school in the intervention. The youth and one of the parents completed questionnaires administered at four assessment points (baseline, post-intervention, 3-month follow-up, and 12-month follow-up). It was optional which parent completed the questionnaires, but ultimately it was the mothers who completed the questionnaires at all assessment points. The main teacher for the youth also completed questionnaires at three assessment points (baseline, post-intervention, 3-month follow-up). All questionnaires were administered electronically.

Intervention

The B2S program (Thastum and Arendt, 2017) is a manualized CBT program developed for this study to increase school attendance among youth with SAPs. It was used together with a modular transdiagnostic CBT manual called MindMyMind (MMM; Jeppesen, 2017). The MMM manual includes modules of evidence-based CBT targeting subclinical or clinical levels of anxiety, depression, behavioral disturbance, and trauma-related problems. The MMM manual served as a supplement to the B2S manual, inasmuch as the B2S manual indicated when relevant modules and materials from the MMM manual should be used. Therefore, when referring to the B2S program and intervention in this study it refers to the B2S manual supplemented by the MMM manual.

As previously described (Thastum et al., 2019), the B2S intervention is based on a descriptive functional analysis obtained by the School Refusal Assessment Scale (SRAS) (Kearney and Silverman, 1993) together with a case formulation approach to planning CBT for attendance problems. According to B2S, SAPs motivated by positive reinforcement require CBT procedures such as parent management, contingency management, and contracting to minimize incentives for school absenteeism and boost incentives for attendance. SAPs motivated by negative reinforcement require CBT procedures such as cognitive restructuring and exposure-based practice to reduce the youth's anxious or depressive physical sensations and thoughts. In the development of the intervention, we were guided in part by "the @School program" (Heyne et al., 2014) and the "When Children Refuse School program" (Kearney and Albano, 2007). The @school program informed the collaboration with school staff during regular meetings at the school (e.g., preparing the youth for return to school) and how to address parent motivation. The "When Children Refuse School" program informed the flexible use of different modules depending on the youth's underlying problems, as well as the role of negative and positive reinforcement.

Each family receiving the B2S intervention was treated by one psychologist and one co-therapist. The psychologists were employed as school psychologists in Aarhus Municipality or as clinical psychologists at CEBU. Graduate students in clinical psychology at CEBU functioned as co-therapists. All psychologists and co-therapists participated in a 6-day training

course and received weekly face-to-face group case supervision by specialists in clinical child psychology.

Before the intervention, youth and parents participated in a 1.5-h structured assessment interview held by the appointed therapists to get an understanding of the youth's development, family and social situation, SAPs, and functioning in daily life. The interview also included a brief, semi-structured psychopathological interview with the youth and parents together. This interview was based on a psychopathological interview developed for MMM but included questions about the youth's SAPs. The youth did not receive a psychiatric diagnosis following the assessment, but based on the information derived from the interview and the questionnaires, a case formulation was developed by the therapists. The structure of the case-formulation was based on the framework by Carr (2006), where factors related to the development and maintenance of the youth's problem were included in the case-formulation. These factors were related to predisposing factors, maintaining factors, protective factors, and precipitating factors (Carr, 2006). The case-formulation was discussed with a clinical psychologist at CEBU, and a preliminary treatment plan was constructed.

The B2S intervention consisted of ten 1-h sessions with the youth and parents together, except for sessions two and six, which were only with the parents. Additional, the B2S intervention consisted of a 1-h booster session with the youth and parents together which were flexible but recommended to be 1–3 months after the last session. Finally the B2S intervention consisted of four school meetings. At week one and two of the intervention there were two sessions per week to speed up the change process. The following six sessions could optionally be scheduled weekly or biweekly as decided by the therapist and the family together.

An important part of the B2S intervention is the collaboration with the school. In addition to the B2S sessions with the family, there were four meetings with relevant school officials from the youth's school, the therapists, and the parents. The meetings were held at the youth's school in the beginning, the middle, and the end of the intervention, as well as shortly after the booster session. **Table 1** presents an overview of the intervention.

Feasibility Measures

Sample Characteristics

Measures were collected at baseline, post, 3-months follow-up, and 12-months follow-up. At baseline, parents completed questions regarding family demographics, socioeconomic status, and the youths' and parents' mental and physical health. At post, 3-months follow-up, and 12-months follow-up, the parents were asked to report if there were changes to their background information. Also at baseline, youth and parents provided a functional assessment of the youth's SAPs by completing an adapted version of the *School Refusal Assessment Scale-revised* (SRAS-R; Kearney, 2002; Heyne et al., 2017). The SRAS-R includes four subscales each representing a functional condition of school refusal in youths: (1) avoid stimuli that provoke negative affectivity, (2) escape aversive social and/or evaluative situations, (3) pursue attention from significant others, and/or (4) pursue tangible re-enforcers outside of school. The SRAS-R consists of a youth and parent version, both including 24 items rated on a 7-point scale ranging from 0 to 6. The function with the highest combined score from both the youth and parent version is classified as the primary function of the SAPs and are hypothesized to be the primary maintaining variable of the youth's SAPs. Functional scores within 0.25 points of one another are considered equivalent (Kearney et al., 2004).

Evaluation of Data Gathering Feasibility

Response rate for completing the questionnaires for all informants were evaluated at each data collection point.

Resources to Implement the Study

The intervention and study procedure were evaluated at post with the psychologists, and staff at CEBU. The average number of hours the psychologists spent on working with the families were reported as well.

Acceptability of Intervention and Study Procedures

Acceptability was measured with respect to: (a) the intervention, and (b) the study procedures. Participant's dropout rate, session attendance, and duration of the intervention were registered.

Youths, parents, and teachers completed items related to treatment satisfaction at post- intervention. All items where rated on a 3-point scale: (0) "Not True," (1) "Partly True," and (2) "True." For qualitative feedback about the program, open-ended questions were included to allow the participants to comment freely on what worked well and what needed to be improved in the B2S program.

At 12-month follow-up, youths and parents rated their satisfaction on the same 3-point scale and responded to open-ended questions about the family's continuing use of strategies acquired in the B2S intervention.

Measures Regarding Preliminary Outcome of the Intervention

The following measures were included as a part of the preliminary evaluation of B2S. The measures were planned to be outcomes in the RCT:

Primary Outcomes

School absenteeism

School absenteeism was measured using two different types of data. First, *school absenteeism (registry) data* were drawn from official school absenteeism records collected by the schools, provided by the municipality. The absenteeism score was calculated as a percentage of absenteeism in each of the following periods: (a) 4 weeks before the baseline questionnaires (baseline score); (b) 4 weeks after the post-intervention questionnaires (post score); (c) 2 weeks after the 3-month follow-up questionnaires (3-months follow-up score); and (d) 2 weeks after the 12-month follow-up questionnaires (12-months follow-up score).

Second, *school absenteeism (parent-report) data* was based on parent reports of the youth's school-absenteeism at three occasions: (1) parents retrospectively reported the amount of school absenteeism the youths had the previous 3 months before

TABLE 1 | Overview of the Back2School program.

Session number	Duration (hours)	Participants	Session content
S-0	1.5	T, C, P	Structured assessment interview with the family conducted by the therapists (a clinical psychologist and a clinical psychology graduate student). The family receive handouts regarding psychoeducation and SMART goals as homework for session 1.
Clinical conference	1	T	The therapists are discussing the case formulation, choice of treatment modules, and treatment goals with a clinical psychologist at CEBU
S-1	1	T, C, P	Presenting and discussing the case-formulation with the family. Psychoeducation regarding school absence, and development of SMART goals.
S-2	1	T, P	Parent only session 1. Helping the parents to clarify and solve potential questions/problems regarding school placement, somatic symptoms in child, and parental motivation for change. Planning better routines at home. Working with potential sleep problems.
S-3	1	T, C, P	Planning the date for returning to school, and planning the first day back in school. Creating a gradual exposure plan for returning to school.
S-4	1	T, C, P	Psychoeducation regarding the youth's primary problem related to school absence (anxiety, depression, or behavioral problems) by including the MMM Modules. Continuing work with the gradual exposure plan for returning to school.
S-5	1	T, C, P	Continuing work with CBT methods regarding the youth's primary problem related to school absence (e.g., exposure, behavioral activation and/or cognitive restructuring) by including the MMM Modules. Continuing work with the gradual exposure plan for returning to school. Working with boundaries.
S-6	1	T, P	Parent only session 2. Working with parent behavior. Identifying and reducing factors at home that maintain school absence.
S-7	1	T, C, P	Continuing to work toward returning to school. Revising gradual exposure plan. Focusing on how parents can support the youth in exposure exercises, and returning to school. Problem solving
S-8	1	T, C, P	Open session tailored to needs of the youth and parents. Continue working with CBT methods by including the MMM Modules. Open session tailored to needs of the youth and parents. Continue working with CBT methods by including the MMM Modules.
S-9	1	T, C, P	
S-10	1	T, C, P	Concluding the program. Focusing on maintaining and continuing the progress.
Booster	1	T, C, P	Focusing on maintaining and continuing the progress. Problem solving regarding relevant problems. Advise possible further help.
SM-1	1	T, P, S	Presenting and discussing the case formulation with the school. Planning the schools role in the youth's return to school. Informing the school about the B2S and CBT approach.
SM-2	1	T, S	Following up on the youth's progress in the school setting. Discussing potential academic difficulties, problems regarding bullying or other problems.
SM-3	1	T, S	Planning how the school can continue to help and support the youth. Discussing relapse prevention.
SM-4	1	T, S	Planning how the school can continue to help and support the youth. Discussing relapse prevention.

S, session; SM, school meeting; C, child; P, parent; T, therapist; S, school officials. The table is published in Thastum et al. (2019).

inclusion in the study using the following categories: less than 10% (less than 6 schooldays), 10–20% (6–12 schooldays, which are about 1 day of absenteeism each week or biweekly), 20–30% (12–18 schooldays, which are about more than 1 day of absenteeism each week), 30–50% (18–30 schooldays, which are about 2–3 days of absenteeism each week), more than 50% (more than 30 schooldays which are 3 or more days of absenteeism each week), or 100% (the child has not attended school the last 3 months); (2) at the 3-month follow-up, parents retrospectively reported the youth's school attendance for the 2 weeks prior to their completion of the questionnaires mailed to them, which was calculated to an absenteeism percentage score; and (3) the same applied at the 12-month follow-up.

Secondary Outcomes

Emotional, behavioral, and social difficulties

Youth emotional, behavioral and social difficulties was measured using the extended version of the *Strength and Difficulties Questionnaire* (SDQ; Goodman, 2001). The first part of the SDQ contains 25 items rated on a 3-point scale ranging from 0 to 2. Items are summed up into five subscales for emotional symptoms, conduct problems, hyperactivity/inattention, peer relationships problems, and prosocial behavior. The second part of the SDQ is an impact scale evaluating the level of chronicity, distress, social impairment, and burden to others of the problems reported. The scale contains five items (three items in the teacher version) rated on a 3-point scale ranging from 0 to 2. The SDQ includes both a child, parent, and teacher version. The Danish version of the SDQ has shown acceptable internal consistency (Cronbach's $\alpha = 0.44–0.86$) (Niclasen et al., 2012).

Anxiety

Youth anxiety was measured using the *Spence Children's Anxiety Scale* (SCAS; Spence, 1998; Nauta et al., 2004). The scale contains 44 items (including six positive fillers in the child-version) rated on a 4-point scale ranging from 0 to 3. Items are summed up into six subscales for the specific anxiety diagnoses social phobia, panic disorder and agoraphobia, generalized anxiety disorder, obsessive–compulsive disorder, separation anxiety disorder, and fear of physical injury. The SCAS includes both a child (SCAS) and parent version (SCAS-P). The Danish versions of the SCAS

and SCAS-P have demonstrated satisfactory test-retest reliability (SACS: r = 0.61–0.84, SACS-P: r = 0.53–0.88), and acceptable internal consistency (SCAS: Cronbach's α = 0.59–0.92, SCAS-P: Cronbach's α = 0.50–0.90 (Arendt et al., 2014).

Depression

Youth symptoms and levels of depression was measured using the *Mood and Feelings Questionnaire* (MFQ; Daviss et al., 2006). The MFQ includes both a child (33 items) and parent version (34 items), rated on a 3-point scale ranging from 0-2. Items are summed up into a total score. The Danish version of the MFQ has demonstrated high internal consistency (Cronbach'sα = 0.92–0.93) (Eg et al., 2018).

Self-efficacy

Youth self-efficacy was measured using the *Self-Efficacy Questionnaire for School Situations* (SEQ-SS; Heyne et al., 1998). The SEQ-SS contains 12 items about different situations associated with school attendance, each rated on a 5-point scale ranging from 1 to 5. The items are summed according to two subscales, Academic/Social Stress and Separation/Discipline Stress. A total score is calculated by summing all items (scores range from 12 to 60). Higher scores indicate a higher level of self-efficacy. The English version of the SEQ-SS has demonstrated high internal consistency (Cronbach's α = 0.81–0.85) and good test–retest reliability (r = 0.79–0.91) (Heyne et al., 1998).

Parental self-efficacy was measured using the *Self-Efficacy Questionnaire for Responding to School Attendance Problems* (SEQ-RSAP; Heyne et al., 2016). The SEQ-RSAP contains 13 items concerning the parents' level of self-efficacy in relation to helping their child attend school regularly and without difficulty. The items are rated on a 4-point scale ranging from 1 to 4. The items are summed to yield a total self-efficacy score (scores range from 13 to 52). Higher levels of reported self-efficacy are represented by a higher score. A preliminary unpublished study of a longer version demonstrated high internal consistency (Chronbach's α = 0.91) and good test-retest reliability (r = 0.67) (Lavooi, 2010).

Additional Outcomes

The following measures were included as secondary outcomes in the RCT. Here they were included with the purpose of testing the feasibility of the length of all questionnaires in total:

Family functioning

Youths and parents reported on family functioning using the General Functioning subscale from *The McMaster Family Assessment Device* (FAD; Epstein et al., 1983).

Experience of being bullied

The *Personal Experience Checklist* (PECK; Hunt et al., 2012) is a questionnaire developed by Hunt et al. to provide a multidimensional assessment of a young person's personal experience of being bullied.

Parent-school collaboration

Three items were developed to parents and teachers by the researchers to assess the quality of the collaboration between the parents and the school rated on a 4-point scale (from "not at all" to "very good").

Pediatric quality of life

Youths reported their health-related quality of life using the *Child Health Utility 9D* index (CHU-9D; Stevens, 2012). The CHU-9D was developed for use in cost-utility analysis and therefore quality adjusted life years can be calculated (Canaway and Frew, 2013).

Data Analysis

Descriptive statistics, including means, *SD*, and frequencies, were used to describe the sample characteristics, participant dropout rates, session attendance, intervention duration, and proportion of completed questionnaires.

Qualitative data based on the participants' responses to the open-ended questions about the acceptability of the B2S program was collected and analyzed using a qualitative description design (Neergaard et al., 2009). The qualitative data were analyzed using content analysis with modifiable coding systems that corresponded to the data collected. The data was sorted to identify similar patterns and themes. Commonalities and differences among the data were also assessed. The codes were then grouped into six themes representing the general feedback from the participants about the intervention. The analyses were done by the first author and the coding were performed in NVivo (NVivo qualitative data analysis software; QSR International Pty Ltd. Version 12, 2018).

The preliminary evaluation of outcome included an evaluation of change over time on the outcome measures using Mixed Linear Models (MLMs). MLMs tolerate missing values and do not unnecessarily compromise statistical power. All MLMs were estimated with the *maximum likelihood method* (ML) and were based on the intent-to treat sample (n = 24). However, due to the small sample size, the *restricted estimate maximum likelihood method* (REML) is predicted to be the best fit, and was therefore used for the final model (Raudenbush and Bryk, 2002). The data were hierarchically arranged in two levels, with time at *Level 1* nested within individuals at *Level 2*. All models included a random intercept, and the slope was specified as random if improving the model fit evaluated by a significant change in the – 2LL fit statistics (Heck et al., 2013). Based on visual inspection of the data and an inspection of the model indices for the time variable on all outcome, the best fit for the time variable was evaluated for each model using – 2LL fit statistics (Heck et al., 2013). Covariance type was tested with Variance Components (VC), First-Order Autoregressive Structure [AR(1)], and Heterogeneous First-Order Autoregressive [ARH(1)], using the – 2LL fit statistics (Heck et al., 2013). The AR(1) or ARH(1) structure was used if it improved the model fit using – 2LL fit statistics (Heck et al., 2013).

Intervention effects were indicated by a significant change in means over time, indicated by a significant two-way interaction between participant's scores and time. Effect sizes were expressed by Cohen's d[1], with 0.2, 0.5, and 0.8 considered as small, medium,

[1]Effect-size equation (Cohen's d): $d = 2 \times \sqrt{(F/df)}$

TABLE 2 | Overview of the initial testing of the variables in the mixed linear models.

Outcome	Respondent	Method	Time	Covariance Type	Para.	Model
School Absenteeism (%)	Municipality	REML	TimeLog	VC	4	Random intercept and fixed slope
SCAS Total	Youth	REML	TimeLog	ARH(1)	6	Random intercept and random slope
	Parent	REML	Time	VC	4	Random intercept and fixed slope
SDQ – Emotional symptoms	Youth	REML	TimeLog	VC	4	Random intercept and fixed slope
	Parent	REML	TimeLog	VC	4	Random intercept and fixed slope
	Teacher	REML	TimeExp	VC	4	Random intercept and fixed slope
SDQ- Conduct problems	Youth	REML	Time	VC	4	Random intercept and fixed slope
	Parent	REML	TimeLog	VC	4	Random intercept and fixed slope
	Teacher	REML	TimeExp	VC	4	Random intercept and fixed slope
SDQ- Hyperactivity/inattention	Youth	REML	TimeLog	VC	4	Random intercept and fixed slope
	Parent	REML	Time2	VC	4	Random intercept and fixed slope
	Teacher	REML	TimeExp	VC	4	Random intercept and fixed slope
SDQ- Prosocial behavior	Youth	REML	TimeWeeks	VC	4	Random intercept and fixed slope
	Parent	REML	TimeLog	VC	4	Random intercept and fixed slope
	Teacher	REML	TimeWeeks	VC	4	Random intercept and fixed slope
SDQ- Problems with peers	Youth	REML	Time	VC	4	Random intercept and fixed slope
	Parent	REML	TimeLog	ARH(1)	6	Random intercept and random slope
	Teacher	REML	TimeExp	VC	4	Random intercept and fixed slope
SDQ Impact	Youth	REML	Time	VC	4	Random intercept and fixed slope
	Parent	REML	TimeLog	VC	5	Random intercept and random slope
	Teacher	REML	Time	VC	4	Random intercept and fixed slope
MFQ	Youth	REML	Time	VC	4	Random intercept and fixed slope
	Parent	REML	TimeLog	VC	5	Random intercept and random slope
SEQ-SS - Total	Youth	REML	Time2	ARH(1)	6	Random intercept and random slope
SEQ-SS -Academic	Youth	REML	Time	VC	4	Random intercept and fixed slope
SEQ-SS -Separation	Youth	REML	Time2	ARH(1)	6	Random intercept and random slope
SEQ-RSAP - Total	Parent	REML	TimeLog	ARH(1)	6	Random intercept and random slope

REML, restricted Estimate Maximum Likelihood Method; TimeLog, log linear model of time; TimeExp, exponential model of time; TimeWeeks, modeling of time in weeks; Time2, quadratic model of time; ARH(1), first-Order autoregressive; VC, Variance Components.

and large effects respectively (Cohen, 1988). See **Table 2**, for an overview of the initial testing of the variables in the MLMs.

All statistical analyses were performed with IBM SPSS Statistics 25.00 for Windows (IBM Corp. Released 2016. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY, United States: IBM Corp).

RESULTS

Recruitment Capability and Sample Characteristics

The sample consisted of 24 youths and their parents. Initial, the recruitment time were expected to take 1–2 months based on the eligible number of children in the municipality with more than ten percent absenteeism. However, it took 3 months to include the 24 youths.

As presented in **Table 3**, 24 youths aged 12.7 years (range 8–16 years) participated in the study. There was an equal number of girls and boys, and one fourth of the youths were totally absent from school across the last 4 weeks before study inclusion. For the majority of the youths the school had indicated to the parents that they were worried about the youths' mental wellbeing. All youths had received treatment before study inclusion due to their absenteeism problems. Eight youths (33%) had one or more psychiatric diagnoses prior to inclusion, and they all had an anxiety disorder as one of their diagnoses. For the parents, 21% reported mental health problems themselves. In the semi-structured psychopathology interview, only one youth did not report any psychiatric symptoms. Symptoms related to anxiety and/or depression were most often reported (75% reported anxiety symptoms, 46% reported depressive symptoms).

Feasibility of Data Gathering Procedures

As presented in **Figure 1**, in all cases, a parent completed the questionnaires at baseline and post-intervention, and in nearly all cases, a parent completed the questionnaires at 3-month follow-up (95%). However, the response rate declined at the 12-month follow-up, where almost two-thirds (64%) of the parents completed the questionnaires. The teachers' completion rates were relatively high at baseline (83%) and post-intervention (86%). There was a decline in completion rates at 3-month follow-up (59%). When asked, teachers reported that they did not complete the questionnaires because they lacked sufficient knowledge regarding the youths in question because of their absenteeism from school. The response rates for the youths were high at baseline (92%), low at post-intervention (55%) and

TABLE 3 | Sociodemographic characteristics of sample.

Characteristic	Participants
Age at inclusion, years, mean (*SD*)	12.7 (2.4)
Gender, males, *n* (%)	12 (50%)
Gender by age group, *n* (%)	
Males, aged 6–10 years	3 (25%)
Males, aged 11–16 years	6 (75%)
Females, aged 6–10 years	1 (8%)
Females, aged 11–16 years	11 (92%)
School absenteeism four weeks prior to inclusion, *n* (%)	
≤10% absenteeism 11–30% absenteeism	0 (0%) 4 (17%)
31–50% absenteeism	5 (21%)
51–70% absenteeism	5 (21%)
71–99% absenteeism	4 (17%)
100% absenteeism	6 (25%)
Academically behind peers (teacher-report), *n* (%)	8 (33%)
Educational support[1], *n* (%)	5 (21%)
School/teacher worried about the youth's mental wellbeing, *n* (%)	19 (79%)
Changed school at least once before inclusion, *n* (%)	8 (33%)
Changed school after inclusion, *n* (%)	10 (42%)
Former treatment due to absenteeism problems, *n* (%):	
School psychologist	16 (67%)
Private psychologist	13 (54%)
General practitioner	19 (79%)
Pediatric physician	4 (17%)
Child psychiatrics	16 (67%)
Other forms of help[2]	5 (21%)
No former treatment	0 (0%)
Current medication, *n* (%)	1 (4%)
Diagnosis prior to inclusion, *n* (%):	
Psychiatric diagnosis[3]	8 (33%)
Somatic diagnosis[4]	5 (21%)
Living with two parents, *n* (%)	11 (46%)
Maternal education (Intermediate or long), *n* (%)	16 (67%)
Paternal education (Intermediate or long), *n* (%)	8 (33%)
Ethnicity, *n* (%)	
Both parents born in DK	19 (79%)
One foreign born	5 (21%)
Two foreign born	0 (0%)
Maternal self-reported mental health problems, *n* (%)[5]	5 (21%)
Paternal self-reported mental health problems, *n* (%)[6]	4 (17%)
Symptoms reported in psychopathology interview, *n* (%)	
Anxiety symptoms	18 (75%)
Panic disorder	4 (17%)
Separation anxiety	6 (25%)
Social phobia	8 (33%)
Specific phobia	7 (29%)
Agoraphobia	7 (29%)
Generalized anxiety	5 (21%)
Obsessive Compulsive Disorder (OCD)	3 (13%)
Depressive symptoms	11 (46%)
Depressive symptoms – depressed mood/irritability	8 (33%)
Depressive symptoms – diminished interest or pleasure	10 (42%)
Depressive symptoms – fatigue or loss of energy	8 (33%)
Post-Traumatic Stress Disorder (PTSD)	2 (8%)
ADHD	4 (17%)
Oppositional defiant disorder	5 (21%)
Conduct disorder	1 (4%)
Pervasive or specific developmental disorders	6 (25%)
No symptoms reported	1(8%)
SRAS-R:	
Function 1: Avoidance of stimuli provoking negative affectivity, *n* (%)	17 (71%)
Function 2: Escape from aversive social and/or evaluative situations, *n* (%)	1 (4%)
Function 3: Pursuit of attention from others, *n* (%)	5 (21%)
Function 4: Pursuit of tangible reinforcement outside school, *n* (%)	0 (0%)
Function 1 and function 2 combined, *n* (%)[7]	1 (4%)

[1]Number of youths receiving any educational support in the school (support teacher). [2]Help from the social services in the municipality (n = 3), psychotherapist (n = 1), occupational therapist (n = 1). [3]Anxiety(n = 8), autism (n = 4), learning difficulties (n = 2), depression (n = 1), OCD (n = 1), ADHD (n = 1), eating disorder (n = 1). [4]Asthma or allergy (n = 4), constipation (n = 1). [5]Anxiety(n = 5), depression (n = 4), ADHD (n = 2), autism (n = 1), learning difficulties (n = 1). [6]Depression (n = 3), anxiety(n = 1), alcohol abuse (n = 1). [7]Functional scores within 0.25 points of one another are considered equivalent.

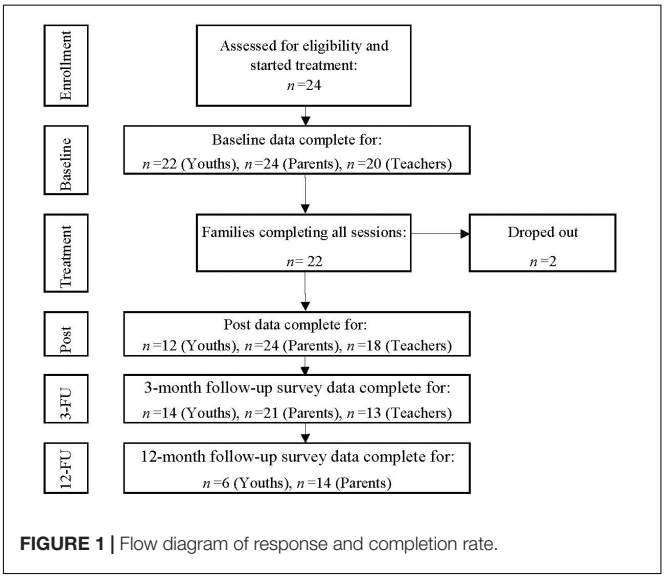

FIGURE 1 | Flow diagram of response and completion rate.

3-month follow-up (64%), and very low at 12-month follow-up (27%).

The registry data was used in the analyses, as absenteeism was measured daily and not retrospectively and therefore viewed as the most accurate measure of school absenteeism. However, we replaced the registry data in the analyses with the parent-reported school absenteeism data in the following instances: (1) For seven of the participants (27%) their school absenteeism at baseline was reported as zero percentage in the registers, indicating that the schools did not register the absenteeism of the students. For these seven participants the parent-reported school absenteeism, at screening, were used instead of the registry data at baseline. (2) One participant (4%) was enrolled in a private school, therefore

no registry data was available for this case, and the parent-reported school absenteeism was used instead. (3) After the summer break following the intervention, five youths (21%) changed to schools outside the municipality making registry data unavailable, thus parent-reported school absenteeism was used in these cases. (4) To investigate the robustness of the registry data, differences between the registry- and parent-reported data were compared for the three occasions where parent-reported data and registry data on school attendance were available (baseline, 3-month follow-up, and 12-month follow-up). A difference in the level of attendance was found at the 3-month follow-up for two cases (8%), where school absenteeism was significantly lower in the registry data compared to the parent-reported data (case 1: registry data = 10% and parent-reported data = 100%, case 2: registry data = 0% and parent-reported data = 70%). In these cases parent-report was used in the analyses.

Resources to Implement the Intervention and Study Procedures

Based on evaluation with the psychologist two difficulties with the resources to manage the intervention was stated: Firstly, the psychologists spent more time on the cases than initially planned where we estimated an average of 30 psychology hours pr. case. This equals what the municipality estimates that psychologists spend on youth with SAP in their treatment as usual. In average however, the psychologists spent in average 40 h on each case. This included participation in sessions and school meetings, as well as preparation for the sessions and if necessary communication with the families between the sessions. Secondly, the psychologists reported feeling less competent in cases where youths' primary problems were related to behavioral problems.

Based on evaluation of the resources to manage the study procedures with the staff and research team at CEBU there were enough resources to manage the technical part of the questionnaire collection. Office spaces, and administrative capacity were also evaluated as being sufficient.

Acceptability of the Intervention

Of the 24 families who agreed to participate, 22 families (92%) completed the intervention. The two families (8%) who did not complete the intervention ended the intervention after session two and session six, respectively. The parents who withdrew after six sessions reported that their child found it too stressful to attend the sessions and that the setting with both parents, a psychologist, and a co-therapist attending the sessions made the child feel uncomfortable. The other family withdrew after two sessions because of lack of motivation to work with the child's SAP as they were waiting for the child to attend a different school several months later.

With regards to participation, 19 of the 22 remaining families (86%) completed all 10 sessions, one family completed nine sessions, and two families completed eight sessions. The booster session was conducted with 19 families (86%). Thirteen (59%) of the cases included four school meetings as planned. One case did not include any school meetings. On average, the first school meeting was conducted 26 days after the first session (range 6–46 days). The mean duration of the B2S intervention (from the first session to the 10th session) was 80 days, with a range of 55–139 days. The intervention course was prolonged for three families, due to the summer holiday. On average, there were 76 days from the last session to the booster session with a range of 35–136 days. Again, due to the summer holiday the time between the last session and the booster was prolonged for most of the families. The whole B2S program, from assessment interview to booster session, spanned on average 182 days (range from 154 to 210 days).

Intervention Satisfaction

In general, both youth and parents were satisfied with B2S. As shown in **Table 4**, the majority of the youths and all parents answered 'true' or 'partly true' to the statement 'If a friend needed similar help, I would recommend B2S,' and all answered 'true' or 'partly true' to the statement 'I trusted the therapist,' All parents answered 'true' or 'partly true' to the statement 'I have been given enough information about the purpose and course of B2S prior to the start,' and all youths answered 'true' or 'partly true' to the statement 'The therapist had an understanding of my worries and issues.'

Satisfaction as reported by the teachers was lower with regards to the statements 'I trusted the therapist' and 'I have been given enough information about the purpose and course of B2S prior to the start.' The majority of the teachers (83%) found the meetings at the school useful by reporting "partly true" or "true" to this statement.

At 12-month follow-up, all youths and 85% of the parents who completed the 12-month follow-up replied "partly true" or ""true" that they would still recommend B2S to a friend. Sixty-seven percent of the youth reported that they used the strategies from B2S, and 77% of the parents found the strategies helpful and a part of their everyday life. The B2S strategies which the parents still found helpful at 12-month follow-up were related to the specific cognitive behavioral techniques (e.g., graduated exposure, problem solving, rewarding, and cognitive restructuring).

Qualitative Feedback About the B2S Program

The participants' responses to the open-ended questions about B2S were grouped within the six themes below. All participants completing the post-questionnaires (12 youths, 24 parents, and 18 teachers) responded to the open-ended questions and provided qualitative feedback.

Theme 1: assessment

Two parents and one teacher commented on the need for a better initial screening and assessment of the youth before the start of the program. One parent commented: *"It will be better for the children to be diagnosed before, to give a complete evaluation of what will be the most efficient help for the child."* Another parent commented: *"I had hoped to find the answer to why my son was/is sad. He has indicated that there is 'something' that he found difficult to talk about that makes him sad. But we have never worked out what that is."* Only one commented on the length of the

TABLE 4 | Intervention Satisfaction at post-intervention.

Item	Respondent	Response categories		
		Not True	***Partly True***	***Certainly True***
If a friend needed similar help, I would recommend Back2School	*Youth*	3 (25%)	3 (25%)	6 (50%)
	Parent	0 (0%)	6 (25%)	18 (75%)
	Teacher	2 (11%)	6 (33%)	10 (56%)
I trusted the therapist	*Youth*	0 (0%)	2 (17%)	10 (83%)
	Parent	0 (0%)	2 (8%)	22 (92%)
	Teacher	1 (6%)	7 (39%)	10 (56%)
I have been given enough information about the purpose and course of Back2School prior to the start	*Parent*	0 (0%)	3 (12%)	21 (88%)
	Teacher	2 (11%)	8 (44%)	8 (44%)
The therapist had an understanding of my worries and issues	*Youth*	0 (0%)	5 (42%)	7 (58%)
The meetings at the school was useful	*Teacher*	3 (17%)	9 (50%)	6 (33%)

Data presented as n (%).

questionnaires, where a parent reported that the questions were too difficult for an 8-year old.

Theme 2: the structure of the B2S program

Several parents commented on the structured and systematic approach of the B2S program, as a positive part of the program. The focus on both the youths' strengths and difficulties was highlighted as well: *"It was very useful that both the child's strengths and difficulties were identified."* Parents viewed the inclusion of both the youths and their parents as a positive feature of the program. When asked about what worked well in the program, parents replied: *"That my daughter and I got a common language and techniques to work with her anxiety issues"* and "*That we were together in the program, the holistic perspective on the need of all family members to be aware of their behavior and thoughts."* Others were positive about the inclusion of sessions with the parents only. One negative comment was reported regarding the inclusion of the parents in the intervention, where the parent stated that the presence of two therapists and parents could be too much for the youth compared to individual therapy only with the youth. Another parent mentioned that the therapist should be aware of adjusting the communication to a level understandable for the child and not just the parents. Two parents found it difficult to attend the sessions at the Center as their child found it difficult to get out of the house and therefore the child did not participate in the sessions.

Theme 3: the therapeutic techniques

Several participants commented on the usefulness of the graduated exposure. One youth commented: *"I have realized that to overcome my anxiety I have to face what triggers my anxiety."* The rewards combined with the graduated exposure was also valued: "*It was really good and fun with the different types of rewards (stickers, praise) and the rewards that were given when doing graduated exposure."* One youth recommended that the program in the future used more *in vivo* exposure. Several parents found the parent management techniques very helpful, including the implementation of new routines at home, techniques to manage conflict, and the support from the therapist making the parent's more comfortable in making demands to their child.

Theme 4: collaboration with schools

Parents and teachers highlighted the importance of including the school in the intervention: *"The school makes an effort when there are meetings and especially follow-up meetings"* and *"As a school we got a better understanding of what anxiety is and how to plan a longer course for the child. As a teacher it can be difficult to know how to handle the situation or the student."* The involvement of school management was also regarded as important: "*It is important that the school management is involved and is attending the meetings."* Parents and teachers also commented on the timing of the school meetings, and suggested that the school meetings should be introduced earlier in the program: *"The school and B2S did not communicate in the beginning, which caused confusion because of contradictory guidance"* and *"It seems to be very useful to cooperate on helping the youth (family, school, B2S). However, we (the school) were involved too late in the program."* Some of the teachers recommend that the therapist should gather more information about the student's class and the social environment in the class: *"It is important that B2S focuses on what the child is a part of in the school. I would have liked it if the therapists came and observed the class and talked to the teacher, and thus got more information about what reality the child is coming back to."* Some teachers also reported that there was a need for more information and clearer communication during the program: *"I needed more focus on how I, as a teacher, can handle different situations, to make sure that I am not working against what's taught in B2S"* and *"Better communication, so everybody know what is expected from them."*

Theme 5: timing, intensity, and duration of the program

Another theme from the participants' feedback was the timing of the sessions. It was recommended by some of the parents to conduct the sessions before or after school hours. There was some disagreement in the comments regarding the intensity of the program. Some parents found the frequency of the sessions too intense and wanted more time between the sessions, while other highlighted the pace in the program as positive. Several parents commented on the duration of the B2S program, and suggested adding more sessions and an extra booster session after 1 year.

Theme 6: satisfaction with the therapists

All comments regarding the therapists from youth, parents, and teachers were positive, and reflected great satisfaction with the therapists: *"The therapists were very competent. It felt like they almost knew our son, even though they had only just met him. They were well-prepared,"* "*Very competent therapists, who knew how to make a good contact with our daughter without pressure. They were able to adhere to the manual without being too rigid,*" and "*The therapist gave me hope and motivation to do the things in the future, I want to.*"

Preliminary Outcome of the Intervention

The level of school absenteeism was reduced on average from 67% at baseline to 26% at post-intervention and 20% at 12-month follow-up (see **Figure 2**). The change was significant (p = 0.001) with a large effect size (d = 1.357).

As shown in **Figure 3**, at 12-month follow-up 16 (67%) of the participants were absent from school less than 10% of the time and therefore did not met the inclusion criteria with an absenteeism level of minimum 10% anymore. Four (17%) participants still attended school less than 50% of the time and one of the participant (4%) did not attend school at all at 12-month follow-up. At 3-month follow-up seven (29%) participant had more than 50% absenteeism and three (13%) were total absent from school.

As presented in **Table 5**, there was a significant average effect over time on several outcomes. All informants reported an average significant improvement on the SDQ emotional problem scale and the SDQ impact scale, all with large effect sizes. A significant and large effect on SDQ conduct problems was also found for parent- and youth report. No significant improvement was found on the SDQ hyperactivity scale, and a significant improvement was found only in youth-report on the SDQ peer problem scale, and prosocial behavior. For anxiety symptoms and depression symptoms, youth and parents reported on average a significant improvement with moderate to large effect sizes. On average, significant and large improvement in self-efficacy was also found for both youth and parent.

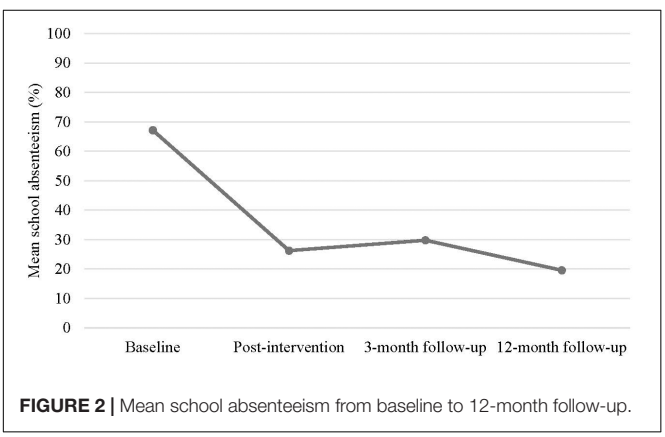

FIGURE 2 | Mean school absenteeism from baseline to 12-month follow-up.

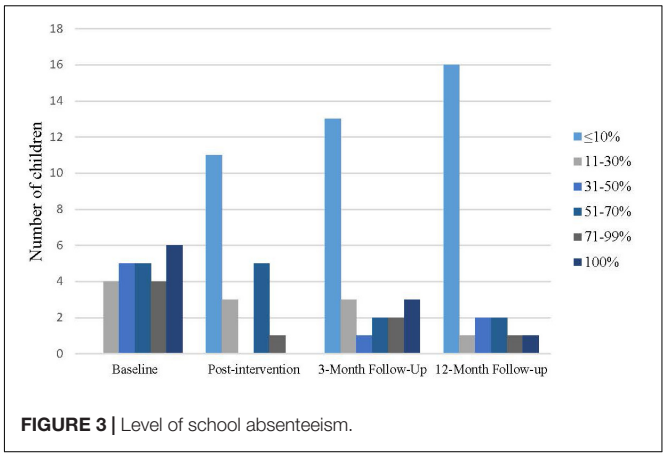

FIGURE 3 | Level of school absenteeism.

DISCUSSION

This study of the acceptability of the B2S intervention and the feasibility of evaluating it an RCT study informs a range of modifications to be made. Following, we discuss modifications to recruitment, data gathering, and resourcing. Thereafter, we discuss the acceptability and preliminary effectiveness of B2S.

Recruitment and Sample Characteristics

Twenty-four youth and their parents were recruited, although it took more time to recruit the targeted number of families than was anticipated. This could be due to the fact that it was difficult to disseminate information about the intervention to parents in the municipality. Not all schools used their information channels to inform parents about the intervention. It was also difficult to get information about the B2S program to relevant professionals (e.g., social workers, psychologists). Because families self-refer to the B2S program, it is important that information about the intervention reaches families in need. Thus, for the RCT, the municipality will make it mandatory for all schools to inform parents about B2S. Before starting the RCT, more effort would be made to get information to relevant professionals, including sending information about B2S to teachers at all schools within the municipality.

The inclusion criterion of 10 percent absenteeism during the last 3 months might be regarded by some as a low threshold for inclusion. However, by using this lower threshold, the results would seem to be relevant to the broader population of youth with SAPs and not only to the smaller group of youth with severe SAPs (e.g., complete absenteeism for the last 6 months). Despite our low threshold for inclusion, most youth who were included in the feasibility study had high levels of school absenteeism, and high scores on measures of anxiety and depression. Only one youth reported no symptoms during the psychopathology interview. In short, while the inclusion criteria permitted referral of youth with mild SAPs, the families of youth with more severe problems sought help via the B2S program.

TABLE 5 | Outcomes and estimates of intervention effects.

Outcome	Respondent	Baseline	Post-intervention	3-Month Follow-Up	12-Month Follow-Up	Time × Intervention effect
SDQ –	Youth	6.18 (2.34) [22]	4.33 (2.50) [12]	3.14 (2.25) [14]	2.83 (2.71) [6]	$F = 37.303$, $p < 0.001$, $d = 2.040$
Emotional	Parent	7.46 (2.02) [24]	5.29 (2.71) [24]	4.71 (2.57) [21]	3.71 (2.09) [14]	$F = 45.01$, $p < 0.001$, $d = 1.744$
symptoms	Teacher	6.20 (2.38) [20]	5.78 (2.24) [18]	4.77 (2.65) [13]		$F = 4.449$, $p = 0.042$, $d = 0.709$
SDQ- Conduct	Youth	1.82 (1.56) [22]	1.33 (0.98) [12]	0.86 (1.10) [14]	0.50 (0.84) [6]	$F = 5.326$, $p = 0.028$, $d = 0.861$
problems	Parent	2.04 (1.63) [24]	1.62 (1.38) [24]	1.24 (1.22) [21]	0.86 (0.95) [14]	$F = 10.752$, $p = 0.002$, $d = 0.847$
	Teacher	0.95 (0.89) [20]	1.62 (1.38) [24]	0.54 (0.78) [13]		$F = 2.083$, $p = 0.157$, $d = 0.455$
SDQ-	Youth	4.68 (2.34) [22]	3.33 (2.06) [12]	3.29 (1.54) [14]	3.33 (2.94) [6]	$F = 3.708$, $p = 0.063$, $d = 0.661$
Hyperactivity/	Parent	3.62 (2.55) [24]	3.92 (2.92) [24]	3.57 (2.38) [21]	3.57 (2.44) [14]	$F = 0.079$, $p = 0.780$, $d = 0.072$
inattention	Teacher	3.40 (2.28) [20]	3.92 (2.92) [24]	2.85 (2.48) [13]		$F = 0.474$, $p = 0.495$, $d = 0.225$
SDQ- Prosocial	Youth	7.32 (2.01) [22]	7.92 (2.07) [12]	7.93 (1.90) [14]	8.67 (1.21) [6]	$F = 4.490$, $p = 0.041$, $d = 0.724$
behavior	Parent	7.17 (2.06) [24]	7.42 (2.17) [24]	7.52 (2.11) [21]	7.57 (2.38) [14]	$F = 2.25$, $p = 0.780$, $d = 0.072$
	Teacher	6.40 (2.56) [20]	7.42 (2.17) [24]	7.77 (2.05) [13]		$F = 4.144$, $p = 0.050$, $d = 0.696$
SDQ- Problems	Youth	3.55 (2.09) [22]	2.92 (1.93) [12]	2.21 (1.93) [14]	1.50 (1.76) [6]	$F = 8.484$, $p = 0.006$, $d = 0.958$
with peers	Parent	2.63 (1.81) [24]	2.38 (1.64) [24]	2.00 (1.84) [21]	2.43 (2.28) [14]	$F = 1.520$, $p = 0.229$, $d = 0.501$
	Teacher	2.40 (2.11) [20]	2.38 (1.64) [24]	1.69 (1.60) [13]		$F = 0.583$, $p = 0.451$, $d = 0.266$
SDQ Impact	Youth	2.77 (2.71) [22]	1.75 (2.16) [12]	1.14 (2.21) [14]	1.17 (1.47) [6]	$F = 6.974$, $p = 0.013$, $d = 0.918$
	Parent	5.63 (2.16) [24]	3.63 (2.99) [24]	3.14 (2.80) [21]	2.93 (3.08) [14]	$F = 15.701$, $p < 0.001$, $d = 1.488$
	Teacher	3.95 (1.57) [20]	2.44 (2.73) [18]	1.08 (1.55) [13]		$F = 31.427$, $p < 0.001$, $d = 1.915$
SCAS Total	Youth	39.43 (16.77) [21]	32.50 (20.34) [12]	28.64 (17.18) [14]	24.84 (13.18) [6]	$F = 5.101$, $p = 0.042$, $d = 1.256$
	Parent	42.00 (16.18) [24]	34.95 (16.44) [22]	33.00 (16.88) [21]	28.21 (15.64) [14]	$F = 22.385$, $p < 0.001$, $d = 3.229$
MFQ	Youth	23.80 (12.13) [20]	17.33 (14.24) [12]	15.57 (13.19) [14]	11.33 (14.08) [6]	$F = 4.954$, $p = 0.033$, $d = 0.763$
	Parent	25.96 (10.00) [24]	18.91 (12.89) [22]	18.43 (13.79) [21]	16.46 (15.01) [13]	$F = 6.531$, $p = 0.017$, $d = 1.002$
SEQ-SS – Total	Youth	37.35 (12.14) [20]	41.83 (13.67) [12]	45.64 (11.75) [14]	51.17 (4.36) [6]	$F = 4.824$, $p = 0.046$, $d = 1.206$
SEQ-SS – Academic	Youth	18.25 (6.21) [20]	20.92 (6.64) [12]	22.36 (6.28) [14]	25.17 (2.64) [6]	$F = 13.282$, $p = 0.001$, $d = 1.291$
SEQ-SS – Separation	Youth	19.10 (6.66) [20]	20.92 (7.53) [12]	23.29 (6.09) [14]	26.00 (2.76) [6]	$F = 4.649$, $p = 0.050$, $d = 1.171$
SEQ-RSAP – Total	Parent	38.17 (4.19) [24]	41.96 (4.61) [22]	43.33 (6.37) [21]	44.23 (6.44) [13]	$F = 11.489$, $p = 0.003$, $d = 1.489$

Data presented as mean (SD) [n].

Data Gathering Procedures and Outcome Measures

The percentage of parents who responded to the questionnaires at baseline, post-intervention and 3-months follow-up was acceptable, except at the 12-month follow-up. In cases where either parents or youth did not complete the questionnaires within 2 weeks, a reminder email was sent on two occasions. Nevertheless, the response rate among youths was low, both after the intervention and at follow-up. None of the youth and just one parent commented on the length of the questionnaires (that it was too long), suggesting that the low response rate among youth was not due to the extensive number of items in the questionnaires. Some of the youths refused to complete the questionnaires or the parents exempted their child from completing the questionnaires, believing that is was too challenging for them. Thus, in the RCT, the importance of completing the questionnaires would be highlighted for the psychologists, co-therapists, as well as the parents and youth. It would be mandatory for the youth and parents to complete the baseline measures to be included in the RCT. In the RCT, in addition to the email reminders, participants not completing the questionnaires would receive a telephone reminder. Because we expect a lower response rate in the control group, participants in the control group would receive a shorter version of the post-intervention assessment battery, and families would be offered a gift card (value 200 DKK/26 EUR) after the completion of post-intervention assessment and again after follow-up.

At 3-month follow-up the response rate among the teachers was low, largely attributable to the fact that 10 youth changed school after the completion of the intervention. The 3-month follow-up questionnaires was collected shortly after the youth's change of school, and therefore the teachers at the new school thought that they did not know the students well enough to complete the questionnaires.

The absenteeism data from the school register was intended to be our primary outcome measure. However, a comparison of parent-reported absenteeism and absenteeism based on school register data suggests that the validity of the school-registered absenteeism was questionable for some youths. In the RCT, we would therefore include a detailed parent registration of the youths' daily attendance during the last 2-weeks before each data-collection points (pre-intervention, post-intervention, and follow-up), to be able to check this registration against the school's registration.

Resources and Ability to Implement the Study and Intervention

There were two main difficulties with respect to resourcing and ability to deliver the intervention. First, the psychologists spent more time than initially planned on the preparation of sessions,

but we expect that the time used per case would be lower in the RCT because the psychologists would be more familiar with study procedures and the intervention itself. However, as a precaution against potential overburdening of the psychologists, two additional psychologists from the municipality would be trained for participation in the RCT. Furthermore, in the RCT, measures of implementation cost and health related benefits will be collected for both the B2S group and treatment as usual group to conduct cost-benefit and cost-utility analyses of the B2S program.

Second, the psychologists were school psychologist with counseling as their main task before participating in B2S. The psychologists received a 6-day training course and weekly face-to-face group case supervision. Based on the preliminary results the competences of the psychologists to use B2S seems sufficient. However, because the psychologists reported feeling less competent in cases where youths' primary problems were related to behavioral problems, a supervisor with expert knowledge about externalizing problems and parent management techniques would be included as a supervisor in the RCT. Other matters related to resourcing were not found to be problematic (e.g., setting up the digital questionnaires and monitoring the questionnaires collections, office space, and administrative capacity).

Acceptability of the Study Procedures and Intervention

The dropout rate of 8 percent is comparable to or lower than other studies examining the effect of therapy for school refusal (Heyne and Sauter, 2013). Moreover, 86 percent of the families participated in all intervention sessions. In general, parents and youth were satisfied with B2S, and satisfaction was maintained 1 year after the intervention. At the 1-year follow-up, the majority of families reported that they had implemented the strategies they acquired during the B2S sessions. The teachers' satisfaction ratings were lower than those of parents and youth, but the majority of the teachers found the meetings at the school useful.

Parent qualitative feedback indicated that some parents wished there had been a more comprehensive diagnostic screening of the youth before the start of the intervention. These were the families for whom symptoms of more complex mental health problems were identified among the youth during their participation in B2S. The B2S psychologists referred these families to psychiatric specialists for a diagnostic screening of the youth. Because the initial screening in B2S already comprised a comprehensive battery of questionnaires, together with the assessment interview, this procedure will not be changed in the RCT.

The family oriented approach was highlighted by the parents in the qualitative feedback as positive, and the parents found the parent management techniques very useful. In addition, the involvement of the school was mentioned as an important part of the B2S program by parents and teachers. Based on the qualitative feedback from teachers and parents, when B2S is implemented in the context of an RCT the school meetings would be scheduled earlier in the program, and a detailed agenda for the meetings would be included in the B2S manual. Two of the parents would have preferred that the sessions were conducted in the home rather that at the clinic because the child did not wanted to leave the house. In these cases the intervention was focused on the parents' behavior, and the parents were taught strategies to work with the child at home. They would be guided in how to help their child attend therapy sessions at the Center, constituting graded exposure for the child with respect to leaving the house, as a step toward ultimately being able to attend school.

Preliminary Outcome of the Intervention

One of the inclusion criteria for participating in the study was absenteeism above 10 percent. Following the B2S program, the number of youths with levels of school absenteeism below 10 percent were increasing from 45 percent of the youth at post-intervention to 54 percent at 3-month follow-up and 66 percent 1 year after the intervention. The large reduction in school absenteeism was comparable to or better than two previous non-controlled studies with youth with SAPs (Heyne et al., 2011; Hannan et al., 2019). However, the youth in those studies were older and presented with more psychological symptoms, perhaps explaining the larger improvement in school attendance in our sample.

B2S includes modules targeting anxiety, depression, and behavioral problems. We observed significant and large reductions over time with respect to each of these areas of youth functioning. This highlights the relevance of these modules in the intervention as it seems that the intervention do address these problems in the youth. Due to the uncontrolled design, the improvement seen in the outcome measures cannot for sure be related to B2S. However, based on this study the inclusion of both the intervention elements as well as outcomes seems relevant for the upcoming RCT.

In addition, the youth and their parents reported a higher level of school-related self-efficacy after the intervention. Specifically, youth felt more able to cope with challenging school situations and parents were more confident about responding to their child's SAP. Because of the change in self-efficacy, and preliminary support for the role of increased self-efficacy in mediating outcomes following treatment for school refusal (Maric et al., 2013), the RCT would include self-efficacy as a mediator variable, measured at two time points during the intervention. This would provide greater insight into the impact of self-efficacy on school attendance and vice versa.

Limitations

There are a number of limitations to the current study. First, the design was uncontrolled and therefore the impact of B2S on the positive changes observed on the outcome measures is not clear. The positive changes may be related to other factors such as spontaneous remission or regression toward the mean. Second, because of the uncontrolled design of the study, the acceptability of randomization and its impact on attrition could not be evaluated. Third, the proportion of youth completing the

questionnaires was low. This was especially the case for the 12-months follow-up were only 27 percent of the youth completed the questionnaires. Third, the validity of absenteeism data from the school register was questionable for some of the youths as the schools had registered 27 percent of the youth as having no school absenteeism at baseline.

CONCLUSION

In conclusion, this study of the feasibility of the B2S program found high participation rates as well as high levels of satisfaction with the program which were maintained 1 year after the intervention. Teacher satisfaction was lower than that of youth and parents, but the majority found the school's participation in the intervention helpful. Preliminary evaluation of intervention outcomes showed a significant increase in school attendance and decrease in psychological symptoms, as well as a significant increase in self-efficacy for both youth and parents.

The study signaled areas for improvement. The main adaptation made to the B2S manual was to increase emphasis on the importance of the school meetings and the timing of these. Several adaptations to the study procedure were also identified. First, to ensure adequate recruitment for the RCT more effort will be made to get information about the B2S program to professionals in the municipality and to parents. Second, parent-reported school absenteeism data will be collected at all time-points to test the validity of the register-based school absenteeism data. Finally, more psychologist resources are needed because it was more time-consuming for the psychologists to implement B2S than expected. Accounting for these adaptations it seems feasible to evaluate the effectiveness of B2S in a RCT.

DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent to participate in this study was provided by the participant, and the participants' legal guardian/next of kin where appropriate.

AUTHOR CONTRIBUTIONS

JL is the corresponding author and drafted the manuscript. MT is the principal investigator. MT and JL obtained funding for the project. MT, DJ, and JL designed the study. WS, PJ, and DH are members of the advisory board for the project. WS and DH advised in the design of the study. PJ developed the psychopathological interview used in the study. All authors were involved in the writing and editing of the manuscript.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Appendix B

Paper 2

Thastum, M., Johnsen, D. B., Silverman, W. K., Jeppesen, P., Heyne, D., & Lomholt, J. J. (2019). The Back2School modular cognitive behavioral intervention for youths with problematic school absenteeism : study protocol for a randomized controlled trial, 1–12. Trials.

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Trials

STUDY PROTOCOL Open Access

The Back2School modular cognitive behavioral intervention for youths with problematic school absenteeism: study protocol for a randomized controlled trial

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Abstract

Background: School absenteeism (SA) is associated with anxiety, depression, and disruptive behavior. It is a risk factor for academic difficulties and school dropout, which predict problems in adulthood such as social, work-related, and health problems. The main goal of this study is to examine the initial effectiveness of a modular transdiagnostic cognitive behavioral therapy (CBT) intervention (Back2School) for increasing school attendance and decreasing psychological problems, relative to a comparator control arm (treatment as usual [TAU]).

Methods/design: One hundred sixty children, aged 7 to 16 years, will be randomly assigned to either Back2School or TAU. The design is a two (Back2School and TAU) by four (preassessment [T1], postassessment [T2], and 3-month [T3] and 1-year [T4] assessments) mixed between-within design. The primary outcome is school attendance based on daily registration. Secondary outcomes pertain to youth psychosocial functioning, quality of life, bullying, self-efficacy, and teacher-parent collaboration. These secondary outcomes are measured via youth, parent, and teacher reports.

Discussion: This study will provide critically needed empirical evidence on the initial effectiveness of a manualized treatment program for youth with SA. If the intervention is found to be effective, the program can be further implemented and tested in a larger school health effectiveness trial.

Trial registration: ClinicalTrials.gov, NCT03459677. Retrospectively registered on 9 March 2018.

Keywords: School absenteeism, Cognitive behavioral therapy, Transdiagnostic, Randomized controlled trial

Background

School is a central context for youth development [1], playing a major role in teaching youth the values of society and preparing them for adult life. Absence from this central context may be precipitated and/or maintained by anxiety, depression, and disruptive behavior [2–4]. School absenteeism (SA) is also a risk factor for academic difficulties and school dropout, all of which are additional predictors of social, work-related, and health problems in adulthood [5–7]. Each day of absence has been shown to have an impact on academic achievement [8]. For Danish schoolchildren, significant negative associations exist between SA on the one hand and school grades, the likelihood of starting secondary education, and the likelihood of completing secondary education on the other hand. Academic and social well-being are significantly lower when there are high rates of SA [9].

In Denmark, the mean rate of SA is 5.6%, amounting to approximately 11 days during a school year [9]. Almost all children are absent from school a few days during a school year owing to illness or other accepted causes, and this level of absence may be considered as nonproblematic and probably without adverse consequences.

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Problematic SA has typically been differentiated in three main types: school refusal (SR), truancy (TR), and school withdrawal (SW). SR refers to SA related to emotional distress in the child, where the child does not try to hide absence from their parents, the child does not exhibit severe antisocial behavior, and the parents have made efforts to get their child to school. TR refers to SA related to externalizing problems, where the absence occurs without the permission of the school and the child typically tries to conceal the absence from their parents. SW refers to SA attributable to parental effort to keep the child at home or where there is little or no parental effort to get the child to school [1]. On the basis of their review of the conceptualization of problematic SA and the differentiation of school attendance problems (SAPs), Heyne et al. [1] concluded that although there is an overlap between the occurrence of SR and TR, between 83% and 95% of youth with problematic SA can be reliably classified as displaying SR, TR, or SW.

Interventions for SA have usually been designed for youths presenting with either TR or SR. A systematic review of TR interventions included 5 randomized controlled trials (RCTs) and 11 quasi-experimental design (QED) studies with a total of 1725 students [10]. Interventions aimed at improving school attendance were effective, overall, in reducing school SA with a moderate and significant mean effect size ($g = 0.46$; mean attendance improvement, 4.69 days). However, in 15 of the 16 studies the absence rates were still above 10% following intervention [10]. A recent systematic review of interventions for SR included six RCTs and two QED studies with a total of 425 students [11]. All but one study used a cognitive behavioral therapy (CBT) protocol. There was a moderate and significant mean effect size of attendance ($g = 0.54$). Findings from both reviews were based on a small number of studies and small sample sizes, and there was substantial heterogeneity between studies. Both reviews recommended conducting studies in which randomized controlled designs and larger sample sizes are used.

Most evidence-based treatments (EBTs) are single-disorder treatments and have been criticized for adapting poorly to the more complex and comorbid problems that are often seen in clinical practice [12], as well as in children with problematic SA. Owing to the heterogeneity of problematic SA, more comprehensive intervention approaches that incorporate treatment of both TR and SR are needed [10, 13, 14]. New transdiagnostic CBT interventions using a modular approach have been developed to target anxiety, depression, and behavior problems within the same manual. Weisz et al. conducted a large RCT using a modular CBT program targeting anxiety, depression, and conduct problems and compared it with TAU and standard EBTs. The results showed that the modular approach outperformed the other treatments on most clinical outcome measures [15]. Other transdiagnostic interventions have been developed and have been shown to be feasible for implementation in school settings [16]. In Denmark, a modular transdiagnostic CBT manual for treating anxiety, depression, and behavior problems (Mind My Mind [MMM]) has recently been developed [17] and is being tested in an RCT.

Some children with problematic SA display anxiety and/or depression; some display externalizing problems, some display both, and some display other problems, (e.g., at a family or school level). In addition, negative cognitions concerning the ability to cope with situations associated with school attendance have been shown to be prevalent among children with problematic SA [18, 19]. Self-efficacy concerning school situations has been found to increase following treatment, and treatment that increases self-efficacy may reduce anxiety, depression, and behavior problems and facilitate reengagement with schooling [20].

An intervention that addressed the needs of this very heterogeneous group therefore needs to be based on an initial assessment and case formulation, followed by a modular, transdiagnostic approach that includes evidence-based interventions for anxiety, depression, behavior problems, parent training and teacher training, and a focus on increasing self-efficacy.

The main objective of this study is to test the efficacy of Back2School (B2S) [21], a modular transdiagnostic CBT intervention aimed at increasing school attendance and decreasing anxiety, depression, and behavior problems among youth with problematic SA. The study uses an RCT design with an active control group receiving treatment as usual (TAU). Based on previous studies, our primary hypothesis is that the B2S intervention will be superior to TAU in improving school attendance. Secondary hypotheses are that the B2S intervention will be superior to TAU in reducing anxiety, depression, and behavior problems. We further hypothesize that improvement in school attendance will be mediated by reductions in the youths' anxiety, depression, and behavior problems and increases in the youths' and parents' self-efficacy. Other members of our research team will perform an economic evaluation comparing the B2S group with the TAU group, both in terms of cost utility measured with a quality-of-life measure and in terms of cost benefit measured by subsequent obtained grades, youth education, employment, and income.

Methods/design

Study design

The study is a randomized controlled, parallel group, superiority trial that compares TAU with a modular transdiagnostic CBT intervention (B2S) for SA in youths aged 7–16 years. The design is a two (Back2School and TAU)

by four (preassessment [T1], postassessment [T2], and 3-month [T3] and 1-year [T4] assessments) mixed between-within design. The overall study design is illustrated in Fig. 1.

Study setting

The study is a collaboration between Aarhus University and Aarhus Municipality, Denmark. The setting for both the B2S and TAU interventions is within Aarhus Municipality. The B2S intervention is developed and managed by the Center for Psychological Treatment for Children and Adolescents (CEBU) at Aarhus University and conducted at the same place. TAU interventions are conducted by Aarhus Municipality, and they take place at settings such as schools and social services within the municipality.

Participants, recruitment, and eligibility criteria

Participants will be youth between 7 and 16 years old in primary and lower secondary school with a minimum of 10% parent-reported SA during the last 3 months. Because the study is conducted in collaboration with Aarhus Municipality, participants need to be registered at public schools in Aarhus Municipality. Private schools within Aarhus Municipality register students' school absence differently from public schools, and they are outside the municipality's jurisdiction, rendering school absence data unavailable. The study will include all youth from 0 to ninth grade, excluding participants in their second semester of ninth grade. The second semester of ninth grade is the final semester in Danish public schools, and after this semester, Aarhus municipality cannot provide absence data. Because we expect a larger attrition rate in the TAU group for the secondary measures, participants in the TAU group receive a shorter version of the postintervention assessment battery, and families are offered a gift card (value 200 DKK/26 EUR) after the completion of each subsequent assessment.

Participants are self-referred, and the families are required to make initial contact to participate in the study. They may be informed and directed by health or education professionals but cannot be formally referred. Prior to the start of the RCT, the municipality will implement extensive information and media campaigns aimed at families and professionals. Participants can contact project coordinators with questions within office hours via telephone or e-mail. The registration to participate will be through a web-based screening located at the B2S projects web page. The initial screening will be a short questionnaire based on inclusion criteria with the following questions: (1) language and school information, (2) parent-reported school absence regarding their child in the last 3 months (excluding holidays or other legal absence), and (3) contact information for one of the parents.

The study's inclusion criteria are as follows: (1) enrolled in a public school within Aarhus Municipality; (2) aged 7–16 years and in 0–9th grade (excluding second semester of ninth grade); (3) report more than 10% SA during the last 3 months of school (based on parent-reported information); (4) the youth and at least one of the parents understand and speak Danish sufficiently to participate in treatment and complete questionnaires; (5) at least one of the parents is motivated to

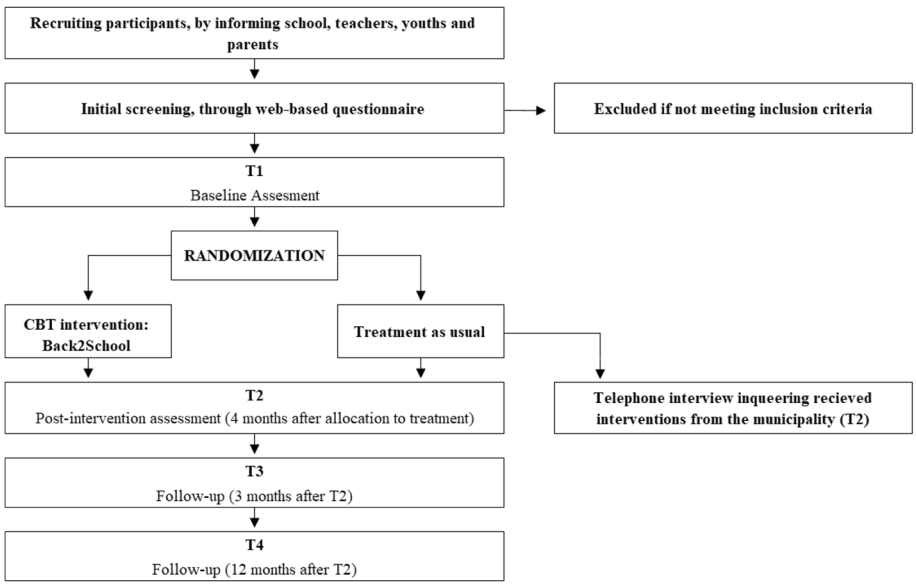

Fig. 1 Flowchart of the Back2School study

work on increasing the youth's school attendance; (6) commitment to participate in assessment, intervention procedures, and acceptance of random assignment to intervention; and (7) written informed consent provided by the holders of the parental rights and responsibilities.

There are three main reasons for choosing the simple, low-threshold inclusion criteria of 10% absence during the last 3 months. First, the problems of SR and TR do not represent the full spectrum of youth with problematic SA. That is, these two types of absence are not exhaustive [22]. Basing the inclusion criteria on percentage of SA ensures that youth with other types of problematic SA are not excluded. Second, using a low threshold for absenteeism (only 10%) renders the results of the study more relevant to the broader population of youth with SAPs and not only to the smaller group of youth with severe SAPs (e.g., complete absence for the last 6 months). Third, the fact that parents are referring their children to the project for intervention suggests that parents perceive their child's absence as problematic.

Participants who do not meet one or more of the inclusion criteria will be redirected in the online screening to a web page informing them of why they are not included in the study and where they can seek other help in the municipality. Participants passing the initial screening will receive verbal (by telephone) and written information and will provide informed consent by electronically signing a consent form. Families are informed that participation in the study is voluntary, that their consent can be withdrawn at any time, and that their participation or withdrawal from the study will not affect their access to the municipality's usual support and treatment. Participating children and their parents will then receive the preintervention assessment battery, and it is required that the child and the parents complete all questionnaires. After completing the assessment battery, participants will be randomized to one of the treatment conditions within a maximum of 4 weeks. If the youth is randomized to participate in the B2S intervention, their main teacher will receive a preintervention assessment battery immediately after the randomization. All children and parents in both conditions, as well as the primary teacher in the B2S condition, will receive a postassessment battery and two follow-up assessment batteries. All assessment batteries are administered electronically.

Randomization

Randomization to treatment condition will be conducted using a computer-generated random digit procedure with two possibilities (B2S and TAU). Treatment outcome of school absence may be affected by the age of participants and the amount of school absence. Therefore, to ensure balanced groups, the randomization will be stratified on the presence of two factors, *age* (first to fourth grade [younger] or fifth to ninth grade [older]) and *amount of school absence* (< 50% [low] or > 50% absence [high]). To maintain similar treatment group sizes, the randomization will be conducted using permuted block randomization. The randomization is administered by staff outside the research group.

Intervention

Back2School program

B2S is a manualized CBT program developed for this study, aimed at treating youths with SA. The B2S program is used together with the transdiagnostic MMM manual [23]. The MMM manual comprises evidence-based CBT methods and techniques organized into disorder-specific modules to target subclinical or clinical levels of anxiety, depression, behavioral disturbance, and trauma-related problems. The CBT methods and techniques in the MMM manual are adapted from EBT programs targeting each of the specific domains of problems in children and adolescents. The MMM manual supplements the B2S program, and the B2S manual refers to relevant material from the MMM manual.

The B2S manual is specifically developed for treating SA. Intervention is determined via a descriptive functional analysis obtained via the School Refusal Assessment Scale (SRAS) [24] together with a case formulation approach to planning CBT for attendance problems. The functional approach involves identifying the motivational function of the child's SA. Motivational functions include (1) avoidance of school-based situations that provoke negative affectivity, (2) avoidance of aversive school-based social/evaluative situations, (3) pursuit of attention from significant others outside of school, and (4) pursuit of tangible reinforcement outside of school [24–26]. The first two motivational functions refer to negative reinforcement; the latter two motivational functions refer to positive reinforcement. SA motivated by positive reinforcement suggests CBT procedures such as parent management, contingency management, and contracting to minimize incentives for SA and boost incentives for attendance. SA motivated by negative reinforcement suggests CBT procedures such as cognitive restructuring and exposure-based practice to reduce the anxious or depressive physical sensations and thoughts. In the development of the intervention, we adapted aspects of the @SCHOOL intervention [27] and the When Children Refuse School intervention [25, 28].

The intervention consists of a 1.5-h clinical interview with the youth and parents aimed at designing a case formulation and a treatment plan and preparing the family for the first therapy session, ten 1-h sessions with the child and parents together (except for sessions 2 and 6, which are only with the parents), a 1-h booster session

with the child and parents together, and four school meetings. With the aim of instilling hope for change in the family, to speed up the change process, and to show the family that the SAP is taken seriously, the first 2 weeks of the intervention involve two sessions per week. For the following six sessions, there is the option to schedule them weekly or once every 2 weeks as decided to be appropriate by the therapist and the family together. The implementation of the booster session is flexible regarding the timing and will be held within 1–3 months after the last session. An important part of the B2S intervention is to collaborate with the school. In addition to the sessions with the child and parents, four meetings with participation of teachers from the youth's school, the therapists, and the parents are conducted. The meetings will take place at the child's school at the beginning, the middle, and the end of the treatment period, as well as shortly after the booster session. For a detailed overview of the intervention, *see* Table 1.

Clinical interview and case formulation

Initially, the families in the B2S group attend a 1.5-h structured clinical interview held by the appointed therapists. The interview is designed to get an understanding of the youth's SA, development, family and social situation, and functioning in daily life. The interview also includes a brief, semistructured psychopathological interview developed for the study with the child and parents together. Based on the qualitative and quantitative information derived from the interview and the preintervention assessment battery, a case formulation is developed by the therapists. At a clinical case conference, the case formulation is discussed with a clinical psychologist at CEBU, and a preliminary treatment plan is constructed.

Therapists

School psychologists from Aarhus Municipality and clinical psychologists from CEBU will conduct the B2S intervention together with a clinical psychology graduate student at CEBU as cotherapist. There is one psychologist and one cotherapist per case. All therapists and cotherapists receive a 6-day training course and four 1-day brush-up courses regarding assessment, case formulation, and the B2S and MMM manuals. In total, therapists and cotherapists receive 80 h of training. All therapists and cotherapists receive weekly face-to-face group case supervision by specialists in clinical child psychology.

Treatment as usual

The help that the municipality provides to youths with SA varies and is dependent on the available resources in the school and the municipality, as well as the youths' presenting problems. The TAU intervention is requested by the schools and is usually provided by Aarhus Municipality's school psychologists, but it could also consist of counseling by teachers or social workers. For example, the interventions could be meetings with the school and/or the families, individual counseling with the child, flexible school hours, or transfer to special education classes (Aarhus Municipality, 2013). To keep track of the different interventions in the TAU condition, a telephone interview will be conducted with the parents in the TAU group at T2, investigating which interventions participants in the TAU condition have received.

Outcomes

An overview of the included outcome measures and raters (child, parents, and teacher) is presented in Table 2.

Primary outcome

The primary outcome is school attendance, which is measured in two ways:

1. It is mandatory for all public schools in Denmark to report school absence data for all schoolchildren on a daily basis. Daily school absence data for youth included in the study will be provided by Aarhus Municipality. Absence data 1 year prior to the youths' inclusion in the project and at follow-up are also provided by the municipality.
2. Retrospective daily school absence for a 2-week period (10 schooldays) is reported by parents at all assessment points (as part as the assessment battery at preassessment, postassessment, and follow-up).

In addition, the families in the B2S group will register daily absence for each lesson throughout their course in the B2S intervention.

Secondary outcomes

Strength and Difficulties Questionnaire The Strength and Difficulties Questionnaire (SDQ) [29] will be used to measure emotional, behavioral, and social difficulties. The SDQ consists of a self-report version (from age 11) and two proxy report versions for parents and teachers. All three informants complete the SDQ. The SDQ is a brief behavioral screening questionnaire and consists of 25 items rated on a 3-point scale. The items are divided into five 5-item subscales that generate a score for emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behavior. The total difficulties scale sums up the difficulties across the four problem areas (not including lack of prosocial behavior). The extended version of the SDQ

Table 1 Overview of the Back2School program

Session number	Duration (h)	Participants	Session content
S-0	1.5	T, C, P	Structured assessment interview with the family conducted by the therapists (a clinical psychologist and a clinical psychology graduate student). The family receive handouts regarding psychoeducation and SMART goals as homework for session 1.
Clinical conference	1	T	The therapists are discussing the case formulation, choice of treatment modules, and treatment goals with a clinical psychologist at CEBU
S-1	1	T, C, P	Presenting and discussing the case-formulation with the family. Psychoeducation regarding school absence, and development of SMART goals.
S-2	1	T, P	Parent only session 1. Helping the parents to clarify and solve potential questions/problems regarding school placement, somatic symptoms in child, and parental motivation for change. Planning better routines at home. Working with potential sleep problems.
S-3	1	T, C, P	Planning the date for returning to school, and planning the first day back in school. Creating a gradual exposure plan for returning to school.
S-4	1	T, C, P	Psychoeducation regarding the youth's primary problem related to school absence (anxiety, depression, or behavioral problems) by including the MMM Modules. Continuing work with the gradual exposure plan for returning to school.
S-5	1	T, C, P	Continuing work with CBT methods regarding the youth's primary problem related to school absence (e.g. exposure, behavioral activation and/or cognitive restructuring) by including the MMM Modules. Continuing work with the gradual exposure plan for returning to school. Working with boundaries.
S-6	1	T, P	Parent only session 2. Working with parent behavior. Identifying and reducing factors at home that maintain school absence.
S-7	1	T, C, P	Continuing to work towards returning to school. Revising gradual exposure plan. Focusing on how parents can support the youth in exposure exercises, and returning to school. Problem solving
S-8	1	T, C, P	Open session tailored to needs of the youth and parents. Continue working with CBT methods by including the MMM Modules.
S-9	1	T, C, P	Open session tailored to needs of the youth and parents. Continue working with CBT methods by including the MMM Modules.
S-10	1	T, C, P	Concluding the program. Focusing on maintaining and continuing the progress.
Booster	1	T, C,P	Focusing on maintaining and continuing the progress. Problem solving regarding relevant problems. Advise possible further help.
SM 1	1	T, P, S	Presenting and discussing the case formulation with the school. Planning the schools role in the youth's return to school. Informing the school about the B2S and CBT approach.
SM 2	1	T, S	Following up on the youth's progress in the school setting. Discussing potential academic difficulties, problems regarding bullying or other problems.
SM 3	1	T, S	Planning how the school can continue to help and support the youth. Discussing relapse prevention.
SM 4	1	T, S	Planning how the school can continue to help and support the youth. Discussing relapse prevention.

Abbreviations: B2S Back2School, *C* Child, *CBT* Cognitive behavioral therapy, *MMM* Mind My Mind, *P* Parent, *S* School officials, *S* Session, *SM* School meeting, *SMART* Specific, measurable, attainable, realistic, time-bound, *T* Therapist

also asks questions about child distress and interference of problems with home life, friendships, classroom learning, and leisure activities, each scored on a 4-point scale. The impact scale sums up the distress and interference of problems, counting only the moderate and severe levels. The SDQ is a well-established and widely used measure that has shown good psychometric properties in a Danish population [30].

Spence Children's Anxiety Scale The Spence Children's Anxiety Scale (SCAS) [31] is a self-report rating scale on which youths assess their symptoms of anxiety by answering 44 questions (including six positive filler items) on a 4-point scale. The scores are summed on six subscales reflecting symptoms specifically related to social phobia (six items), panic disorder and agoraphobia (nine items), generalized anxiety disorder (six items), obsessive-compulsive disorder (six items), separation anxiety disorder (six items), and fear of physical injury

Table 2 Overview of outcome measures, respondents, and assessment points

Measures	Respondent	Time							
		T1		T2		T3		T4	
		B2S	TAU	B2S	TAU	B2S	TAU	B2S	TAU
Primary outcome measure									
School absence: registry	M	•	•	•	•	•	•	•	•
School absence: parent-reported	P	•	•	•	•	•	•	•	•
Secondary outcome measures									
SDQ	Y, P, T	•	•	•	•	•	•	•	•
PECK	Y	•	•	•		•		•	
FAD	Y, P	•	•	•		•		•	
SCAS	Y, P	•	•	•		•		•	
MFQ	Y, P	•	•	•		•		•	
CHU-9D	Y	•	•	•	•	•	•	•	•
SEQ-SS	Y	•	•	•	•	•	•	•	•
SEQ-RSAP	P	•	•	•	•	•	•	•	•
Other measures:									
Background information	P, T	•	•	•	•	•	•	•	•
School and family collaboration	P, T	•	•	•	•	•	•	•	•
ESQ	Y, P, T			•	•				
SRAS-R	Y, P	•	•						

Abbreviations: B2S Back2School, *CHU-9D* Child Health Utility 9D Index, *ESQ* Experience of Service Questionnaire, *FAD* Family Assessment Device, *M* Aarhus Municipality, *MFQ* Mood and Feelings Questionnaire, *PECK* Personal Experience Checklist, *P* Parent, *SCAS* Spence Children's Anxiety Scale, *SDQ* Strength and Difficulties Questionnaire, *SEQ-RSAP* Self-Efficacy Questionnaire for Responding to School Attendance Problems, *SEQ-SS* Self-Efficacy Questionnaire for School Situations, *SRAS-R* School Refusal Assessment Scale–Revised, *T* Teacher, *Y* Youth

(five items). A total score reflects the overall severity of anxiety symptoms.

Parent version of the Spence Children's Anxiety Scale The parent version of the Spence Children's Anxiety Scale (SCAS-P) [32] is a self-report rating scale on which parents assess their child's symptoms of anxiety. It includes the same items as the SCAS but without the six filler items and is administered and scored like the SCAS. The Danish version of the SCAS and SCAS-P has demonstrated good psychometric properties [33].

Mood and Feelings Questionnaire The Mood and Feelings Questionnaire (MFQ) [34] was developed to cover a broad range of cognitive and vegetative symptoms of depression in youths. The MFQ includes youth and parent versions (MFQ-P), consisting of 33 and 34 items, respectively, and each is rated on a 3-point scale. Studies show that the MFQ validly identifies children presenting with major depressive episodes, especially when the MFQ and the MFQ-P are used in combination. The Danish version of the MFQ has shown good psychometric properties [35].

Self-Efficacy Questionnaire for School Situations The Self-Efficacy Questionnaire for School Situations (SEQ-SS) [18] was developed to assess the self-efficacy expectations of school-refusing youths. The SEQ-SS consists of 12 items and 2 subscales: academic/social stress and separation/discipline stress. Each item measures self-efficacy expectations related to different school situations on a 5-point scale. The total score is derived from summing the items together, yielding a total score. The SEQ-SS has been evaluated and shown to have good psychometric properties.

Self-Efficacy Questionnaire for Responding to School Attendance Problems The Self-Efficacy Questionnaire for Responding to School Attendance Problems (SEQ-R-SAP) (Heyne D, Maric M, Westenberg PM: Self-Efficacy Questionnaire for Responding to School Attendance Problems, Unpublished) has been developed to assess parents' self-efficacy in relation to helping their child attend school regularly and without difficulty. The SEQ-RSAP consists of 13 items assessing parents' self-efficacy for dealing calmly and constructively with the child's difficulty attending school, rated on a 4-point scale. In a preliminary study of the psychometric properties of the SEQ-RSAP, the instrument showed promising convergent validity and good temporal stability (Lavooi M: Evaluation of the Self-Efficacy Questionnaire for Responding to School Attendance Problems, Unpublished).

Table 3 Overview of mediator measures, and assessment points for participants in B2S condition

Measure	Respondent	Time	
		S-3	S-7
SDQ	Y, P	•	•
SEQ-SS	Y	•	•
SEQ-RSAP	P	•	•

Abbreviations: P Parent, *SCAS* Spence Children's Anxiety Scale, *SDQ* Strength and Difficulties Questionnaire, *SEQ-RSAP* Self-Efficacy Questionnaire for Responding to School Attendance Problems, *SEQ-SS* Self-Efficacy Questionnaire for School Situations, *Y* Youth

Personal Experience Checklist The Personal Experience Checklist (PECK) [36] was developed to provide a multidimensional assessment of youths' personal experience of being bullied, covering a full range of bullying behaviors, including covert relational forms of bullying and cyberbullying. The youths are asked to rate on a 5-point scale how often they have experienced different forms of bullying over the last month, and the scale consists of 32 items and 4 subscales: relational-verbal bullying, cyberbullying, physical bullying, and bullying based on culture. An evaluation of the PECK scale has shown that it provides a promising assessment of a child's experience of bullying behavior.

Family Assessment Device The Family Assessment Device (FAD) [37] was designed to assess different dimensions of family function. It is rated by both youth (over the age of 12) and parents. It consists of 3 subscales with a total of 60 statements describing various aspects of family functioning. This study will use the subscale for general functioning (12 items). The FAD has been evaluated as a good measure of overall family functioning with good psychometric properties [38].

Collaboration between family and school

Collaboration between family and school will be rated by the schools and parents. This will be rated on three questions:

1. To what degree do you think that the cooperation between the school/teacher/family is working satisfactory?
2. To what degree do you think that the teacher/family listens your suggestions for change?
3. To what degree do you think that it is a good experience to talk to the teacher/family about your child/student?

These questions will be rated on a 4-point scale.

Additional measures

Background information

Participating families will complete a background information questionnaire regarding family demographics, youth's school and SA problems, youth's mental and physical health, parents' mental and physical health, and youth's previous and ongoing treatment. Teachers complete information regarding the child's academic function.

School Refusal Assessment Scale–Revised child version

The School Refusal Assessment Scale–Revised (SRAS-R) child version [39] was designed to evaluate the relative strength of four functional conditions of SR in youths: (1) avoid stimuli that provoke negative affectivity, (2) escape aversive social and/or evaluative situations, (3) pursue attention from significant others, and/or (4) pursue tangible reenforcers outside of school. The SRAS-R will be used as part of the assessment. The SRAS-R child version consists of a youth and parent version, both consisting of 24 items that are equally divided across the 4 functions and rated on a 7-point scale. The scale gives an indication of the strength of the four functional conditions of SR in the youths and is rated by both the youths and parents. The SRAS-R child and parent versions both have been shown to have good retest reliability and parent interrater reliability. A correlation between scores in SRAS-R child and parent versions has also been found.

Economic evaluation

The Child Health Utility 9D Index (CHU-9D) [40] was designed to determine how health affects children's lives and is rated by the youth. The CHU-9D is a generic preference-based measure of health-related quality of life designed for the estimation of quality-adjusted life-years for economic evaluation of health care. It consists of nine dimensions (worry, sadness, pain, tiredness, annoyed feeling, schoolwork/homework, sleep, daily routine, and activities), each with five levels on which the child chooses the level fitting to how they are feeling. The instrument has previously been validated among children and adolescents in Great Britain and Australia, showing good psychometric properties [41, 42]. Socioeconomic data related to various background characteristics about children and parents and prospective data regarding grades, youth education, and employment will be extracted from Statistics Denmark's registers and the registers of Aarhus Municipality and linked to survey data using the child's civil registration number.

Treatment satisfaction

The revised version of the Experience of Service Questionnaire (ESQ), is used to assess satisfaction with the treatment [43]. The ESQ will be administered to youths, parents, and teachers at posttreatment (T2). There are separate versions for youths, with seven items, and parents and teachers, with ten items, including open questions for qualitative feedback.

	STUDY PERIOD							
	Enrolment	Allocation	Intervention period			Post-intervention		Close-out
TIMEPOINT	$-t_1$	t_0	t_1	t_2	t_3	t_4	t_5	t_6
ENROLMENT:								
Eligibility screen	x							
Informed consent	x							
Baseline measures	x							
Allocation to B2S or TAU		x						
INTERVENTIONS:								
Back2School (B2S)			♦	—	—	—	—	♦
Treatment As Usual (TAU)			♦	—	—	—	—	♦
ASSESSMENTS:								
School absence – registry	x					x	x	x
School absence - parent-reported	x					x	x	x
SDQ	x			x [a]	x [a]	x	x	x
PECK	x					x [a]	x [a]	x [a]
FAD	x					x [a]	x [a]	x [a]
SCAS	x					x [a]	x [a]	x [a]
MFQ	x					x [a]	x [a]	x [a]
CHU-9D	x					x	x	x
SEQ-SS	x			x [a]	x [a]	x	x	x
SEQ-RSAP	x			x [a]	x [a]	x	x	x
Background information	x					x	x	x
School and family collaboration	x					x	x	x
ESQ						x		
SRAS-R	x							

Note: $-t_1$ = Baseline assessment (before randomization), t_0 = Randomization, t_1 = Maximum 4 weeks after randomization, t_2 = 3rd week of intervention, t_3 = 6th week of intervention, t_4 = 4 month after randomization, t_5 = 3 month after t_4, t_6 = 12 month after t_3.
a = administered in the B2S group only.

Fig. 2 Standard Protocol Items: Recommendation for Interventional Trials (SPIRIT) diagram of schedule of enrollment, allocation, interventions, and assessments

Mediator measures

As shown in Table 3, to investigate possible mediators for an increase in school attendance, the SDQ, the SEQ-SS, and the SEQ-RSAP will be administered at sessions 3 and 7 during the intervention in the B2S group. For an overview of the schedule of enrollment, allocation, interventions, and assessments, please *see* Fig. 2 for the completed Standard Protocol Items: Recommendation for Interventional Trials (SPIRIT) figure.

Sample size

On the basis of findings of recent meta-analyses of both truant SA [10] and SR SA [11], we expect to find a standardized effect size regarding SA in the range of 0.46–0.54. The targeted sample size is 70 per condition to provide sufficient statistical power (0.80) and a significance level (0.05, two-tailed) to find a generalized effect size regarding SA of 0.54. Similar RCTs have a mean attrition rate of 10% [44–47]; therefore, 80 participants are included in each condition (B2S $n = 80$, TAU $n = 80$).

Statistical analysis

Analyses will be undertaken on an intention-to-treat basis. Any participants who are randomized but withdraw from the study will be included in the analysis as randomized.

Primary study parameters

Mixed linear models (MLMs) will be used to compare groups (B2S and TAU) over time (T1, T2, T3) for all recurrent outcome variables. Later, the same analyses will be performed for the follow-up period (T3, T4). MLMs will be used to measure main effects of group and time and the time × group interaction effects. MLMs tolerate missing values and thus do not unnecessarily compromise statistical power [48]. All MLMs will be estimated with the maximum likelihood method and based on the intention-to-treat sample. All models will include a random intercept, and the slope will be specified as random if improving the model fit evaluated by a significant change in the -2 log-likelihood (- 2LL) fit statistics [49]. A visual inspection of the data and an inspection of the model indices for the time variable will determine the best fit for the time variable. The outcomes of specific problems of relevance in the corresponding subgroups having anxiety, depression symptoms, or behavior problems as their primary problems will be explored.

Mediators

To test the hypothesis that the effects of the SA are mediated by the mediators investigated (i.e., internalizing and externalizing problems and self-efficacy), analytic steps outlined by MacKinnon et al. will be followed [50, 51].

Discussion

Developing an effective intervention for children with SA is critically important because there are a great number of school-aged children who struggle to attend school regularly. The complex nature of SA is often handled with equally complex and unsystematic approaches. This makes it difficult for families to navigate and find the help that fits their situation and problems. There is a lack of systematic approaches for helping youths with SA, which can be tailored to fit the presenting problems of the youths and families that struggle with SA. The present study will provide information about the effectiveness of the manualized transdiagnostic multimodal CBT intervention B2S for treating SA. If the intervention is found to be efficacious, it could be a subject for large-scale implementation in school health services. The systematic program may be easier to implement by health professionals and provide better help for these youths and their families, but it needs to be compared with and found superior to the TAU intervention before such a conclusion can be drawn. In the present study, sound psychometric measures are used with multiple respondents in a study with an RCT design. The two conditions are studied with conditions that closely match a real-world setting.

Trial status

A feasibility study of 24 children was performed in the spring of 2017, with high satisfaction scores and a low dropout rate. Based on the experiences from the feasibility study, the treatment manual and some of the procedures were revised. The present protocol is version 2, October 23, 2018. Inclusion of participants to the RCT started September 4, 2017. Inclusion is expected to be finished by September 4, 2019 (Additional file 1).

Additional file

Additional file 1: Standard Protocol Items: Recommendation for Interventional Trials (SPIRIT) checklist. (DOCX 25 kb)

Abbreviations

B2S: Back2School; CBT: Cognitive behavioral therapy; CEBU: Center for Psychological Treatment for Children and Adolescents; CHU-9D: Child Health Utility 9D Index; EBT: Evidence-based treatment; ESQ: Experience of Service Questionnaire; FAD: Family Assessment Device; M: Aarhus Municipality; MFQ: Mood and Feelings Questionnaire; MLM: Mixed linear model; MMM: Mind My Mind; P: Parent; PECK: Personal Experience Checklist; QED: Quasi-experimental design; RCT: Randomized controlled trial; SA: School absenteeism; SAP: School attendance problem; SCAS: Spence Children's Anxiety Scale; SDQ: Strength and Difficulties Questionnaire; SEQ-RSAP: Self-Efficacy Questionnaire for Responding to School Attendance Problems; SEQ-SS: Self-Efficacy Questionnaire for School Situations; SR: School refusal; SRAS-R: School Refusal Assessment Scale–Revised; SW: School withdrawal; T: Teacher; TAU: Treatment as usual; TR: Truancy; Y: Youth

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Availability of data and materials
N/A.

Authors' contributions
MT is the principal investigator. MT and JJL obtained funding for the project. MT, DBJ, and JJL designed the study and wrote the manuscript. WKS and DAH advised in the design of the study. PJ developed the psychopathological interview used in the study. WKS, PJ, and DAH are members of the advisory board and reviewed the manuscript. All authors read and approved the final manuscript.

Ethics approval and consent to participate
The Regional Ethics Committee has been consulted, and the study has obtained approval from the Danish Data Protection Agency (j.nr. 2015-57-0002). The families receive oral and written information and sign an informed consent form. For participants in the Back2School group, the consent will include consent to video recordings of all Back2School sessions. The families will be informed that participation is voluntary and that they can withdraw their consent at any time. This will not affect their access to the municipality's usual support and treatment.

Consent for publication
N/A.

Competing interests
The authors declare that they have no competing interests.

Publisher's Note

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Appendix C

Paper 3

Johnsen, D. B., Lomholt, J. J., Heyne, D., Jeppesen, P., Jensen, M. B., Silverman, W. K., & Thastum, M. (2020). Who misses school? Sociodemographic and clinical characteristics of Danish youths with school attendance problems. Scandinavian Journal of Educational Research (In review).

Who misses school? Sociodemographic and clinical characteristics of Danish youths with school attendance problems

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Who misses school? Sociodemographic and clinical characteristics of Danish youths with school attendance problems

Abstract

Knowledge of school attendance problems (SAPs) is needed to inform treatments targeting SAPs and protecting youths from negative outcomes associated with SAPs. This study examined the school absence, absence categories (i.e., absence due to illness, excused, non-excused), sociodemographic characteristics, and mental health problems among 152 help-seeking youths with SAPs (i.e., >10% absenteeism). Older youths, youths with mental health problems, and youths whose parents had mental health problems exhibited higher levels of absence. Lower levels of non-excused absence were found among youths with highly educated fathers, and youths living with both parents. Many youths had clinical levels of anxiety, depression, or 'emotional and behavioral difficulties'. The study highlights the need for early intervention, addressing a broad range of mental health problems.

Introduction

Absence from school can be problematic for youths, their families, and society in general (Catterall, 2011; Hancock, Shepherd, Lawrence, & Zubrick, 2013; Neuzil, Hohlbein, & Zhu, 2002). *School attendance problem* (SAP) refers to difficulty attending school or absence from school that is problematic because of its frequency and/or duration (Heyne et al. 2019; Kearney, 2003, 2008b), but definitional bench-marks for SAPs are still lacking (Kearney & Graczyk, 2020). Every missed school day is a day of missed education and the negative effects are incremental (Gottfried & Hutt, 2019). At the same time, the existence of a specific threshold for defining the presence of a SAP would aid communication among professionals and comparative research. In Denmark, Australia, the UK, and the USA, missing 10% or more of school has been described as concerning or problematic, and the prevalence rates of youths with absence above this threshold range from 11% to 25% (Anglophone School District South, 2019; Danish Ministry of Children and Education, 2019; Department for Education, 2019; U.S. Department of Education, 2019).

There are high costs associated with SAPs. School absence has been associated with lower academic achievement among youths (Gottfried, 2009), higher risk of school drop-out (Balfanz, Herzog, & Mac Iver, 2007), and subsequent unemployment (Attwood & Croll, 2006). SAPs have also been linked with health risk behaviors (Eaton, Brener, & Kann, 2008) and mental health problems among youths (Egger, Costello, & Angold, 2003; McShane, Walter, & Rey, 2001). Parental factors associated with SAPs include mental health problems (Marin, Anderson, Lebowitz, & Silverman, 2019) and low education (Henry, 2007). Because school absence begets future school absence (Olson, 2014), and the costs associated with SAPs are high, there is a need for early detection and intervention (Ehrlich et al. 2018; Schoeneberger, 2012). To inform early detection and intervention, research into risk and protective factors is needed.

Much research has addressed SAPs as specific categories or types of school absence (Heyne et al., 2019). For example, studies addressing *school refusal* have focused on school absence related to anxiety (e.g., Ingul & Nordahl, 2013; Melvin et al., 2016) while studies addressing *truancy* have focused on non-excused absence (e.g., Keppens & Spruyt, 2018; Maynard et al., 2017). Sociodemographic characteristic and mental health problems are often described for distinct subgroups of youths with SAPs (e.g., McShane et al., 2001; Vaughn, Maynard, Salas-Wright, Perron, & Abdon, 2013), and these have been found to be differentially associated with specific types of absenteeism. For example, non-excused absence (i.e., unauthorized absence without a doctor's note or other permission from the school) was found to have a greater impact on youths' academic achievement compared to excused

absence (Gottfried, 2009). The higher negative impact of non-excused absence on academic achievement might reflect more problems than just time away from school, such as behavioral, family and school engagement issues (Hancock et al., 2013).

In the current study, variables were investigated for their relation to the total amount of school absence. This was done, in part, because even a single day of absence negatively affects students' academic achievement regardless of the reason for the youths' school absence category (Hancock et al., 2013). Furthermore, because variables related to SAPs have different associations to different types of school absence, all registered absence categories were included and examined in the current study.

The generalizability of knowledge regarding school absenteeism has been hindered by the large variability in how absenteeism has been measured. Self- and parent-reported school absence is commonly used in studies of associations between SAPs and other variables, providing first- and second-hand accounts of absence (Havik, Bru, & Ertesvåg, 2015; Pflug & Schneider, 2016). However, these accounts of school absence might be less accurate when youths or parents are asked to recall absences across a long period of time (Stone, Bachrach, Jobe, Kurtzman, & Cain, 1999). In addition, youths might underreport specific categories of absence such as non-excused absence, if there are consequences associated with such absences (e.g., detention or economic sanctions; Keppens et al., 2019). The present study used parent-reported school attendance data to identify youths with SAPs, while registry-based attendance data were used to examine the youths' school absence in the previous academic year.

The use of school attendance registries, to monitor the amount of school absence and registered absence category (e.g., absence due to illness, excused absence, or non-excused absence) at the individual level, is common practice in many school systems (Danish Ministry of Children and Education, 2019; U.S. Department of Education, 2019). Researchers have used registry based data to examine the development of absence over time (Hancock et al., 2013; Schoeneberger, 2012), assess different types of SAP based on different absence categories (e.g, Truancy: Keppens & Spruyt, 2018), and to determine the severity of SAPs among youths in treatment studies (Melvin et al., 2016). However, irregularities and missing registration have been found in registry data (Heyne, Sauter, Van Widenfelt, Vermeiren, & Westenberg, 2011; Lomholt et al., 2020). In the current study registry-based school attendance data were used to characterize duration (short- and long-term school absence) and all registered categories of absence.

There is substantial evidence of a relationship between SAPs and mental health problems in youths (Heyne, Kearney, Finning, in press). Among clinical samples of youths with SAPs common mental health problems are anxiety,

depression, and behavioral problems (Marin et al., 2019; McShane et al., 2001; Nayak, Sangoi, & Nachane, 2018). Studies of SAPs among youths in community samples also reveal associations with anxiety, depression, and behavioral problems (e.g., Gonzálvez, Díaz-herrero, & García-fernández, 2020; Pflug & Schneider, 2016). However, few studies linking SAPs with mental health problems used a measure of school absenteeism to identify the presence of a SAP. Rather, they relied on brief statements from participants declaring that the youths had problems attending school (e.g., McShane et al., 2001) or they used a measure of motivation for absenteeism but not of actual absenteeism (e.g., Gonzálvez et al., 2020). Because absenteeism was not measured, it was not possible to explore relationships between levels of absenteeism and levels of mental health problems. Studies that have reported levels of absenteeism among youths with SAPs were often limited to youths diagnosed with a mental health problem (e.g., Hannan et al., 2019; Heyne et al., 2002; Reissner et al., 2015), substantially limiting the extent to which relationships between levels of absenteeism and levels of mental health problems could be studied. The current study permitted fuller investigation of mental health problems among youths with SAPs according to level of school absenteeism. In the process, the proportion of youths with clinical levels of mental health problems was studied to estimate the frequency of different mental health problems among youths with SAPs, to understand which problems need to be addressed in future SAP interventions.

In the present study of a large help-seeking sample of youths with SAPs, we aimed to: explore levels of absenteeism, with respect to total school absence, and with respect to the absence categories 'excused absence', 'non-excused absence', and 'absence due to illness'; describe the sample's sociodemographic variables and mental health problems in light of youths' total absence and absence categories; and determine the proportion of youths with SAPs who experience a clinical level of anxiety, depression, or 'emotional and behavioral difficulties'.

Materials and methods

Participants

Data for the present study were drawn from a sample of 152 youths with SAPs, with a mean age of 12.2 years (*SD* = 2.16; age range 6-16). All participants were involved in treatment study for SAPs (see 'NAME et al. YEAR' for complete details of study methodology). The inclusion criteria for participation were: (a) youths enrolled in a public school within 'X' or 'Y' Municipality, Denmark; (b) aged 6–17 years, (c) more than 10% school absence during the last three months of school based on parent-reported school absence. The relatively low-threshold of 10% school

absence was chosen to define a SAP, as previous studies have indicated possible negative consequences associated with even lower amounts of school absence (Gottfried & Hutt, 2019; Hancock et al., 2013).

Procedure

Participants were recruited for the study between August 2017 and March 2019. Following inclusion, the youth and one parent or primary caretaker completed a battery of web-based questionnaires. The municipalities provided school attendance records for each youth. Data presented in the current study were derived from the baseline assessment conducted before treatment start.

Measures

School absence reported by parents was collected prior to inclusion. Parents rated rate how much their child had missed school in the last three months based on the following four categories: 'Less than 10% (less than six absent days)', '10-20% (approximately 6-12 absent days)', '20-30% (approximately 12-18 absent days)', '30-50% (approximately 18-30 absent days)', '>50% (more than 30 absent days)', '100% (the child has not attended school in the last three months)'. This measure was used as an inclusion criterion to determine if the youths had a SAP.

School absence based on school attendance records for the last academic year (last 200 school days) was obtained from 'X' and 'Y' municipality. Absent days were coded dichotomously (1 = *absent*, 0 = *present*) and registered by the schools prospectively day-by-day. All absent days in Danish public schools are registered as one out of three categories: (1) absence due to illness, (2) excused absence, or (3) non-excused absence. Absence due to illness is due to sickness or another functional impairing condition that prevents the student from attending school. Excused absence refers to extraordinary absence granted by the schools (e.g., important family events; vacation outside official school holidays), which is not deemed to have negative consequences for the student. Non-excused school absence is defined as absence where parents fail to inform the school of the reason for the absence or fail to provide a medical certificate if requested by the school in periods of absence due to illness (Danish Ministry of Children and Education, 2019).

Sociodemographic information was provided by parents and included youths' *age*, *sex*, *living situation*, and *previously diagnosed mental health problems*. They also reported *parents' highest achieved education*, and *parental mental health problems*.

Youth anxiety was measured using the Danish version of the *Spence Children's Anxiety Scale* (SCAS; Spence, 1998) rated by youths (SCAS) and parents (SCAS-P). The SCAS and SCAS-P assess symptoms of youths anxiety,

consisting of 44 and 38 items respectively. The Danish version of the SCAS and SCAS-P has demonstrated good internal consistency (Arendt, Hougaard, & Thastum, 2014). The current samples Cronbach's alpha values for the SCAS and SCAS-P was .92, and .92 repectiveley.

Youth depression was measured using the Danish version of the *Mood and Feelings Questionnaire*rated (MFQ; Daviss et al., 2006) rated by youths (MFQ) and parents (MFQ-P). The MFQ and MFQ-P assess a broad range of youth's cognitive and vegetative symptoms of depression. The Danish version of the MFQ and MFQ-Parent has demonstrated high internal consistency (Eg, Bilenberg, Costello, & Wesselhoeft, 2018). The current samples Cronbach's alpha values for the MFQ and MFQ-Parent was .93, and .93 repectiveley.

Youth emotional, and behavioral difficulties were measured using the extended Danish version of the *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 1997) rated by youths (SDQ) and parents (SDQ-P). The SDQ and SDQ-P are brief behavioral screening questionnaires assessing youth's emotional and behavioral difficulties. Higher scores indicate higher levels of difficulties. The Danish version of the SDQ has shown high internal consistency (Niclasen et al., 2012). The current samples Cronbach's alpha values for the SDQ and SDQ-P was .80, and .78 repsectiveley.

Interference of youths problems were assessd using the youth and parent version of the SDQ subscale for impact and interference (SDQ-Impact; Goodman, 1997) rated by youths (SDQ-Impact) and parents (SDQ-P-Impact). The SDQ-Impact and SDQ-P-Impact assess youth's distress and the interference of their problems. Higher scores indicate higher interference and impact. The current samples Cronbach's alpha values for the SDQ-Impact and SDQ-P-Impact was .76 and .64 repectiveley.

Data analysis

Based on the school attendance records, we constructed variables for *short-term* and *long-term* school absence. Short-term absence was defined as the percentage of missed school days in the last three months of school (i.e., 60 school days). Long-term absence was defined as the percentage of missed school days in the last 10 months of school (i.e., 200 school days). The mean percentage of each of the 10 school months were also calculated (see Fig. 2). The percentage of school absence categorized as either due to illness, excused, or non-excused was calculated, for both the short- and long-term school absence.

The demographic variables relating to youths' age, living situation, and youths' and parents' mental health problems were dichotomized. For age, a group division of '6-12 years' and '13-17 years' was used to reflect the ages

of youths in Danish primary and secondary schools. Youths living situation, were divided into either living with both parents or not (i.e., 'Yes' or 'No'). Mental health problems among youths' were either reported as present or not (i.e., 'Yes' or 'No'), and present or not among one of the parents (i.e., 'Yes' or 'No'). Mothers' and fathers' level of education were divided into ordinal variables using three levels of education (i.e., Primary education' 0-10 years (e.g., primary or secondary school), 'Secondary education' 11-15 years (e.g., high school or vocational degree)' and 'Tertiary education' 16-20 years (e.g., masters or doctorate level of education).

Independent samples *t*-tests were used to compare the sample means of school absence and absence categories, divided by youths sex, age, living situation, mental health problems among youths' and parents'. One-way ANOVA tests were conducted to compare difference in means between different parental levels of education, with post-hoc comparison using Gabriel's pairwise comparison test.

Participants with elevated scores on the youth- and parent-reported SCAS, MFQ, SDQ, and SDQ-Impact was assessed using Goodman's (1997) recommendations for frequency distribution. Proposing that approximately 80% of a normative community population is in the 'normal' range; 10% is in the 'borderline' range; and the remaining highest 10% scores are in the 'clinical' range. We used Z-scores to calculate cut-off scores for the normal (80%), borderline (10%), and clinical (10%) range, based on means and standard deviation from published Danish community samples on the SCAS, MFQ, and SDQ (Arendt et al., 2014; Arnfred et al., 2019; Eg et al., 2018). We compared the frequency distribution of elevated scores in the SAP sample with the expected distribution based on the community samples. Chi-squared tests were used to compare the frequencies of 'normal', 'borderline', and 'clinical' range across the SAP and community samples. The comparisons were conducted using age and sex-specific norms provided in the published Danish community samples (Arendt et al., 2014; Arnfred et al., 2019; Eg et al., 2018).

Results

School absence

The frequency distribution of school absence are shown in Fig. 1. On average, the youths missed 34.8% (*SD* = 25.9) of school in their last three months of school, and 23.6% (*SD* = 16.0) in the last academic year. Most of the youths' absence was registered as due to illness in both the short- (*M* = 56.7%, *SD* = 38.7) and long-term period (*M* = 58.7%, *SD* = 33.4). Followed by non-excused (Short-term: *M* = 25.5%, *SD* = 33.7, Long-term: *M* = 24.2%, *SD* = 30.2) and excused absence (Short-term: *M* = 14.6%, *SD* = 26.0, Long-term: *M* = 15.8%, *SD* = 21.2). As shown in Fig. 2, there was an increase in school absence throughout the last academic year.

[FIG. 1]

[FIG. 2]

Mean comparisons of school absence and absence categories

As shown in Table 1, the age-group division showed a significant difference in the amount of long-term absence between the younger (6-12 years, M = 20.1%, SD = 12.8) and older youths (13-17 years, M = 26.9%, SD = 18.0, $t(150) = -2.73$, $p < .01$). There was also a significant difference in long-term absence categorized as non-excused, between the younger (6-12 years, M = 19.0%, SD = 26.4) and older youths (13-17 years; M = 29.1%, SD = 32.8, $t(150) = -2.10$, $p < .05$). Youths' with mental health problems had a significantly higher percentage of long-term absence (M = 29.4%, SD = 19.4) compared to youths without mental health problems (M = 21.5%, SD = 14.1, $t(150) = -2.34$, $p <$. .01). Youths' whose parents had mental health problems presented a significantly higher percentage of short-term absence (M = 41.7%, SD = 27.7) compared to the other youths (M = 31.5%, SD = 24.4, $t(150) = -2.30$, $p < .05$). There was also a significant difference in the amount of long-term absence between the youths whose parents had mental health problems (M = 29.8%, SD = 19.2) compared with the youths who did not (M = 20.5%, SD = 13.3, $t(150) = -3.08$, $p < .01$). Youths living with both parents had a significantly lower percentage of short-term absence categorized as non-excused (M = 19.0%, SD = 31.4) compared to youths in other living situations (M = 33.4%, SD = 34.9, $t(150) = 2.67$, $p < .01$). The percentage of long-term non-excused absence was also significantly lower among youth living with both parents (M = 17.1%, SD = 25.5) compared to youths in other living situations (M = 32.9%, SD = 33.2, $t(150) = 3.32$, $p < .01$). The percentage of long-term excused absence was significantly higher among youths living with both parents (M = 19.2, SD = 25.0) compare to youths in other living situations (M = 11.6%, SD = 14.2, $t(150) = -2.34$, $p < .05$).

Regarding parents' education, there was a significant difference between fathers level of education and short-term non-excused absence ($F(2, 149) = 5.25$, $p < .01$), as well as long-term excused ($F(2, 149) = 4.13$, $p < .05$) and non-excused absence ($F(2, 149) = 7.062$, $p < .01$). Post hoc analysis showed that youths whose fathers' had only completed a primary level of education had significantly higher levels short-term non-excused absence compared to those with a secondary ($p <$. 05, 95% CI [0.8, 34.7]) or tertiary ($p <$. 05, 95% CI [6.8, 46.7]) level of education. Similar findings were found for the long-term non-excused absence, showing significant higher percentages in the group only completing a primary education compared to the groups with a secondary ($p <$. 05, 95% CI [4.4, 34.4]) or a tertiary ($p <$. 05, 95% CI [9.6, 44.9]) level of education. Youths whose fathers had completed a tertiary level of education had

significantly higher mean percentage of long-term excused absence, compared to those with only a primary level of education (p <. 05, 95% CI [1.6, 26.9]).

[TABLE 1]

Elevated scores on SCAS, MFQ, and SDQ

As shown in Table 2, there was a significant difference between the SAP and community sample in the distribution of youth- and parent-rated scores within the normal, borderline, and clinical range for the total scores on SCAS, MFQ, SDQ, and the SDQ-Impact. The proportion of youths with SAPs scoring within the normal range was lower than the expected distribution on all measures, while the proportion of youths scoring within the clinical range was higher than the expected distribution on all measures. The proportion of youths scoring within the borderline range was close to the expected distribution, except for a higher number of youths in the SCAS for males, and a lower proportion of youths on the SDQ-Impact and SDQ-P-Impact for males.

The number of youths scoring within the clinical range were as follows: On the SCAS, 37 (40.2%) males and 32 (53.3%) females. On the SCAS-P, 54 (58.7%) males and 48 (80.0%) females. On the MFQ, 28 (30.4%) males and 26 (43.3%) females. On the MFQ-P, 64 (69.6%) males and 41 (68.3%) females. On the SDQ, 35 (38.0%) males and 28 (46.7%) females. On the SDQ-P, 59 (64.1%) males and 37 (61.7%) females. On the SDQ-Impact score, 43 (46.7%) males and 37 (61.7%) females. Finally, on the SDQ-P-Impact score, 68 (73.9%) males and 47 (78.3%) females.

The majority of the sample were rated within the clinical range of at least one of the total scores of SCAS, MFQ and SDQ, by the youths' (n = 92, 60.5%) or the parents' (n = 132, 86.8%). Among the youths, 31 (20.4%) were within the clinical range of only one measure, and 61 (40.1%) rated within the clinical range of two or more measures. The parents rated 24 (15.8%) youths within the clinical range of only one measures, and 108 (71.1%) youths within two or more measures.

[TABLE 2]

Discussion

This investigation of a large sample of youths with SAPs found significantly higher levels of long-term school absence among older youths and youths with mental health problems. The older youths also presented significantly higher levels of non-excused school absence. Short- and long-term absence were significantly higher among youths whose parents reported having mental health problems. Youths living with both parents had significantly lower levels of short- and long-term non-excused absence, and significantly higher levels of long-term excused absence.

Furthermore, youths with highly educated fathers had significantly lower levels of short- and long-term unexcused school absence, and significantly higher levels of long-term excused absence. The study also showed that the majority of youths presented with a clinical level of symptoms associated with anxiety, depression, or 'emotional and behavioral difficulties'. Finally, the level of interference caused by the youths' problems was often in the clinical range.

The average amount of school absence among youths (34.9% short-term; 23.6% long-term) was lower than that reported in previous studies of treatment for SAPs (40 to 80%; Heyne et al., 2002; King et al., 1998; Melvin et al., 2016). This might be explained by the fact that in the current study absenteeism was measured across a longer period of time (i.e., 60 and 200 days versus 10 to 20 days in previous studies). Still many youth in the current study displayed problematic absenteeism. On average, they missed more than a month of school in the previous three months, and the percentage of absence across the previous academic year was more than four times the national average (5.8% absence across 200 days) (Danish Ministry of Children and Education, 2020).

The youths' school absences increased during the academic year prior to entry in the study. This development was in line with previous research showing that school absence among youths increases steadily across the school years (Hancock et al., 2013; Schoeneberger, 2012). It was also found that there was a small increase in average monthly absence (5.5%) in the first seven months, while there was a considerably higher increase in absence (18.4%) in the three months prior to inclusion in the study. This suggests that school absence among youths with a SAP increases, and that severe levels of school absence can manifest in a short time. The relatively rapid increase in school absence points to a narrow window of opportunity for early intervention. This resonates with previous calls for early interventions to prevent the escalation of absences into SAPs (Ingul, Havik, & Heyne, 2018; Kearney & Graczyk, 2020), and it necessitates a reliable system for detecting emerging SAPs (e.g., Chu et al. 2018).

We discovered discrepancies between the self-reported absence data and the registry-based data. According to the attendance records, 23 participants were absent from school less than 10% of the time in the last three months. Of these 23 participants, parents reported them to be absent 10-20% (n = 6), 20-30% (n = 5), 30-50% (n = 4), < 50% (n = 7), and 100% (n = 1). In addition, we observed that 22 of the 152 participants had 100% absence as reported by their parents, while only two participants had 100% absence based on the attendance records. One explanation for these discrepancies is that parents over-report youths' school absence, and another is that the attendance records underestimate or falsely report school absence (Keppens et al., 2019). A further explanation for the observed

discrepancies is related to how schools register students' absence. According to Danish law, public schools are obliged to register students' days of absence and not their days of attendance (Danish Ministry of Children and Education, 2019). Consequently, when an absent student is not registered as absent, he or she will be automatically registered as having attended school, possibly deflating the number of absences among youths. The identified discrepancies between absence as reported by parents and absence from municipality attendance records raises issues regarding the reliability and validity of attendance records in general, and Danish attendance records in particular.

The present study found that the older youths (12-17 years) presented significantly higher levels of total long-term school absence compared to the younger youths (6-12 years). These findings were in line with previous studies showing that older youths present higher levels of school absence and that higher age is a significant risk factor for developing SAPs and later dropout (Gubbels, van der Put, & Assink, 2019; Schoeneberger, 2012). Furthermore, we found that the older youths presented significantly higher levels of non-excused school absence compared to the younger youths. These results resemble previous findings showing that non-excused absences (e.g., truancy) were more prevalent among older youths (Maynard et al., 2017).

Regarding sex, no significant differences were found for amount of school absence or absence category. These findings are consistent with Danish national data showing similar levels of school absence for males and females (Danish Ministry of Children and Education, 2020). However, a small majority of the current sample consisted of males (60%), and there were some notable sex differences in ratings on symptoms of anxiety and behavioral problems. Specifically, females reported more symptoms of anxiety (SCAS) and higher interference (SDQ-Impact) than the males, while males reported more behavioral problems (SDQ subscales for Conduct Problems and Hyperactivity/Inattention, see Appendix 1). These results are in line with previous findings showing that anxiety disorders are more prevalent among females while behavioral disorders are more prevalent among males (Dalsgaard et al., 2019). Because symptoms of anxiety (e.g., shyness; avoiding social situations at school) are more likely to go undetected compared with behavioral problems (e.g., disturbing the class; conflict with peers), males may be more likely to be referred for SAPs, possibly explaining the trend observed in the current study.

There was no significant difference in the amount of school absence among youths living with both parents and youths in other living arrangements. However, when analyzing absence by categories, we found that youths living with both parents had less non-excused absence and more excused absence. Although the difference was non-significant, youths living with both parents had lower levels of school absence, lending partial support to previous

studies finding a link between youths with separated or divorced parents and SAPs (Ingul & Nordahl, 2013; McShane et al., 2001). Our findings suggest that in families where both parents are living together, parents are better at reporting the reason for the youth's school absence to the schools, possibly reducing the prevalence of non-excused absence relative to excused absence.

There were no significant differences in the total amount of school absence in relation to parental education. However, there was a significant difference regarding the percentage of absence categorized as excused and non-excused. Youths whose fathers completed secondary or tertiary levels of education showed a significantly lower amount of non-excused school absence and higher levels of excused absence, compared to fathers completing only a primary level of education. The same tendency was observed for mothers' level of education, although non-significant. Previous research has identified low parental education as a risk factor for developing SAPs and later school dropout (Gubbels et al., 2019). Perhaps parents with higher education are more successful at acquiring excused leaves of absence for their child (e.g., vacation outside the official school holidays). In any case, the differences in percentage of excused and non-excused absence related to fathers' education is an important finding. Extensive amounts of non-excused school absence might lead to economic sanctions (e.g., in the UK and Denmark; Danish Ministry of Children and Education 2019; Department for Education 2015). Our results suggest that economic sanctions are more likely to occur in families where parents have lower levels of education. This could lead to further socioeconomic disparities, because lower levels of education have been linked to low-income families (De Gregorio & Lee, 2003).

We found that school absence was higher among youths with a parent who had a mental health problem. Similar results have been reported in previous studies. McShane et al. (2001) found a high prevalence of mental health problems among mothers (53%) and fathers (34%) of youths with anxiety based SAPs, and Gubbels et al. (2019) reported that parental mental health problems were a significant risk factor for developing SAPs. Our findings suggest that the level of school absence is negatively affected by parental mental health problems. A possible explanation could be that parental mental health problems magnify the challenges parents face when helping a child with a SAP, as suggested by Heyne (2006).

Youths diagnosed with a mental health problem had significantly higher levels of long-term school absence compared to youths without mental health problems. These results are in line with previous findings linking mental health problems with SAPs (Egger et al., 2003; Gonzálvez et al., 2020). However, no significant difference in the levels of short-term school absence was found between youths with and without a diagnosed mental health problem.

A large proportion of the current sample had scores in the clinical range for anxiety (SCAS), depression (MFQ), or 'emotional and behavioral difficulties' (SDQ). There was also a high number of youths who were in the clinical range on more than one of the measures (i.e., SCAS, MFQ, and SDQ). The number of youths presenting with symptoms in the clinical range exceeded that found among youths with SAPs in a community study in the US (Egger et al., 2003). Furthermore, our findings indicate that there were more youths with clinical symptoms of anxiety, depression, and 'emotional and behavioral difficulties' (youth-reported: 60.5%, parent-reported: 86.8%) compared to the number of youths diagnosed with any mental health problem (26.3%) prior to inclusion. Many youths with SAPs may present symptoms of mental health problems that could go undetected by schools and mental health professionals. Furthermore, the frequency and diversity of symptoms of poor mental health observed among youths indicates the need for SAP treatments designed to address different mental health problems. Previous treatments accounting for comorbidity when treating youths with SAPs have shown promising results in both alleviating symptoms of mental health problems and increasing school attendance (Hannan et al., 2019; Heyne et al., 2011; Lomholt et al., 2020; Tolin et al., 2009).

Strengths and limitations

To the best of our knowledge, this is the first study of school absence among youths with SAPs to use detailed attendance records, enabling description of the youths' long- and short-term school absence and the categories of absence. Furthermore, the study included two measures of school absence, a parent-reported measure and registry-based attendance records. Two limitations of the study are noteworthy. First, because the sample was limited to families who were receptive to intervention for SAPs, the findings cannot be generalized to families who do not seek treatment despite the presence of a child with a SAP. Some of the families who do not seek treatment may represent cases of *school withdrawal*, which is a type of SAP characterized by parents willfully keeping their child at home or exerting little effort to get their child to attend school (Heyne et al., 2019). These parents are unlikely to refer themselves to a program for the treatment of SAPs. The characteristics of youths and parents for whom *school withdrawal* applies remain understudied. Second, the study is cross-sectional and therefore no causal inferences can be drawn. For example, it remains unclear as to whether the increase in youths' school absence precedes the development of symptoms of mental health problems, or if the development of mental health problems contributes to a subsequent increase in school absence.

Scientific and practical implications

Several implications arise from the current study. The level of school absence was found to increase during the previous academic year, and rapidly in the three months prior to inclusion, highlighting the need to address school absence early to prevent a further increase in absence over time. Youths with mental health problems were likely to have higher levels of school absence in the previous academic year. Mental health problems were also prevalent for both mothers and fathers, and youths who had at least one parent reporting mental health problems were more likely to have higher levels of long- and short-term school absence. This suggests that when mental health professionals are working with youths with SAPs, they should screen youths for mental health problems and also gather information regarding parents' mental health problems. The high proportion of youths with clinical levels of one or more different mental health problems highlights the need for interventions that can encompass complex and comorbid mental health problems. Economic sanctions related to non-excused absence should be used with caution, as sanctions are more likely to affect low-income families and possibly lead to larger socioeconomic disparities in society. The identified discrepancies between school absence reported by parents and attendance records highlight the need more valid and reliable systems for measuring school absence.

Conclusions

Who misses school? That is, what were the characteristics of a Danish help-seeking sample of youths with SAPs? Youth and parent reports showed that the sample consisted of youths with high levels of school absence, high levels of emotional and behavioral symptoms, and considerable impact on their functioning. The youths' school absence increased during the previous academic year, with a rapid increase in the three months prior to entering the study. Older youths and youths diagnosed with a mental health problem had high levels of long-term school absence. Youths living with both parents presented less non-excused absence and more excused absence. In families where at least one parent had a mental health problem, youths were more often missing school. Youths from families where fathers had completed a high level of education presented lower levels of school absence categorized as non-excused. The majority of the sample presented symptoms of mental health problems within a clinical range. Discrepancies were found between the parent-reported and registry-based data on school absence, indicating that registry based attendance records are not failsafe data sources. Future studies should examine the reliability and validity of data from school attendance records. Efforts need to be made to improve the accuracy of registration systems in schools. Finally, it would seem that interventions that account for the complexity of SAPs (e.g., Hannan et al., 2019; Heyne et al., 2011;

Lomholt et al., 2020; Tolin et al., 2009) are more likely to be effective for youths presenting high levels of school absence together with a complex clinical presentation including anxiety, depression, and/or behavioral disorders.

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Table 1 *Mean comparisons of short- and long-term school absence (%) and related absence categories (%).*

Short-term absence:		**Total absence (%)**			**Absence due to illness (%)**			**Excused absence (%)**			**Non-excused absence (%)**		
Variable	*Group (n)*	*M (SD)*	*t / F*	*M diff. CI*	*M (SD)*	*t / F*	*M diff. CI*	*M (SD)*	*t / F*	*M diff. CI*	*M (SD)*	*t / F*	*M diff. CI*
Sex	*Males (92)*	33.35 (25.69)	-.880	-12.29,	56.58 (37.32)	-.036	-12.96,	13.01 (23.13)	-.870	-13.00,	27.15 (33.23)	.763	-6.78,
	Females (60)	37.14 (26.31)		4.72	56.81 (41.01)		12.50	16.97 (29.93)		5.08	22.88 (34.44)		15.32
Age (years)	*6-12 (74)*	31.69 (24.47)	-1.468	-14.43,	58.95 (37.04)	.704	-8.00,	16.65 (27.38)	.957	-4.30,	21.70 (29.74)	-1.352	-18.03,
	13-17 (78)	37.84 (27.04)		2.13	54.52 (40.31)		16.85	12.61 (24.64)		12.38	29.03 (36.84)		3.38
Mental health problem, Y	*No (112)*	33.71 (24.02)	-0.808	-15.08,	56.24 (38.46)	-0.230	-15.77,	14.35 (25.84)	-0.182	-10.37,	27.63 (34.70)	1.331	-3.99,
	Yes (40)	38.04 (30.73)		6.40	57.88 (39.79)		12.48	15.22 (26.76)		8.62	19.40 (30.16)		20.45
Mental health problem, P	*No (102)*	31.50 (24.44)	-2.304*	-18.88,	57.15 (39.17)	0.214	-11.81,	15.75 (27.46)	0.794	-5.31,	24.16 (33.45)	-0.677	-15.45,
	Yes (50)	41.67 (27.72)		-1.45	55.71 (38.05)		14.67	12.18 (22.82)		12.45	28.11 (34.27)		7.56
Living with both parents	*No (68)*	38.38 (24.68)	1.520	-1.92,	52.91 (37.96)	-1.079	-19.27,	10.74 (19.83)	-1.714	-14.94,	33.40 (34.92)	2.670**	3.74,
	Yes (84)	31.98 (26.68)		14.72	59.72 (39.23)		5.66	17.68 (29.85)		1.06	19.03 (31.36)		25.01
Mothers level of education (years)	*0-10 (8)*	35.42 (23.57)	0.907		41.87 (38.73)	2.436		18.74 (20.50)	0.144		39.39 (25.84)	1.130	
	11-15 (105)	36.59 (25.97)			61.20 (37.50)			14.70 (27.22)			23.15 (32.86)		
	16-20 (39)	30.04 (26.26)			47.54 (40.43)			13.38 (24.00)			28.83 (36.84)		
Fathers level of education (years)	*0-10 (26)*	37.95 (24.59)	0.276		45.79 (40.61)	1.278		7.89 (14.31)	1.408		42.48 (37.26)	5.248**	
	11-15 (87)	34.71 (26.19)			58.33 (37.41)			14.64 (25.93)			24.73 (33.38)		
	16-20 (39)	33.08 (26.63)			60.23 (39.95)			18.90 (31.31)			15.74 (27.78)		
Long-term absence:		**Total absence (%)**			**Absence due to illness (%)**			**Excused absence (%)**			**Non-excused absence (%)**		
Sex	*Males (92)*	23.01 (16.16)	-.550	-6.72,	57.99 (32.28)	-.321	-12.78,	16.06 (20.69)	.183	-6.32,	24.86 (29.29)	.343	-8.20,
	Females (60)	24.48 (15.86)		3.80	59.78 (35.36)		9.20	15.42 (22.04)		7.61	23.14 (31.70)		11.65
Age (years)	*6-12 (74)*	20.06 (12.80)	-2.725**	-11.86,	63.01 (32.19)	1.555	-2.27,	16.62 (21.77)	.461	-5.21,	19.02 (26.38)	-2.088*	-19.57,
	13-17 (78)	26.94 (18.00)		-1.89	54.61 (34.26)		19.06	15.03 (20.68)		8.39	29.08 (32.80)		-0.54
Mental health problem, Y	*No (112)*	21.53 (14.14)	-2.335**	-14.53,	59.11 (32.77)	0.251	-10.65,	15.63 (20.87)	-0.176	-8.41,	24.38 (30.18)	0.133	-10.28,
	Yes (40)	29.35 (19.42)		-1.11	57.55 (35.60)		13.76	16.31 (22.23)		7.04	23.64 (30.52)		11.76
Mental health problem, P	*No (102)*	20.53 (13.25)	-3.079**	-15.30,	59.41 (33.03)	0.372	-9.28,	17.47 (22.66)	1.521	-1.53,	22.14 (28.73)	-1.192	-16.48,
	Yes (50)	29.82 (19.20)		-3.28	57.25 (34.51)		13.59	12.40 (17.43)		11.67	28.34 (32.83)		4.08
Living with both parents	*No (68)*	26.29 (14.82)	1.885	-0.23,	53.97 (33.94)	-1.576	-19.27,	11.63 (14.21)	-2.341*	-13.94,	32.93 (33.23)	3.231**	6.13,
	Yes (84)	21.40 (16.68)		10.00	62.52 (32.70)		2.17	19.19 (25.02)		-1.17	17.10 (25.52)		25.52
Mothers level of education (years)	*0-10 (8)*	27.63 (17.43)	2.420		43.17 (30.71)	3.008		17.13 (12.89)	0.447		39.69 (26.90)	1.344	
	11-15 (105)	25.03 (16.08)			62.97 (32.64)			14.73 (21.08)			22.30 (29.90)		
	16-20 (39)	18.87 (14.92)			50.37 (34.30)			18.43 (22.85)			26.07 (31.20)		
Fathers level of education (years)	*0-10 (26)*	28.88 (15.28)	1.736		48.66 (35.15)	1.497		9.08 (11.03)	4.128*		42.26 (34.16)	7.062**	
	11-15 (87)	22.43 (15.64)			61.53 (32.06)			14.44 (18.77)			22.88 (29.00)		
	16-20 (39)	22.65 (16.96)			59.06 (34.83)			23.34 (28.44)			15.04 (25.18)		

Note: Y: Youths, P: Parents, M: Mean. SD: Standard Deviation. M diff. CI = Mean difference confidence intervals (95%). t: t-value from independent samples t-test, F: F-value from One-way ANOVA
** p<.05 level (2-tailed).*
*** p<.01 level (2-tailed).*

Table 2 *Participants with elevated scores on SCAS, MFQ, SDQ-Total and SDQ-Impact, compared with the expected distribution from Danish norm data.*

			Youth				Parent			
			SAP	**Community[a]**	**Test statistics**		**SAP**	**Community[a]**	**Test statistics**	
			n (%)	*n (%)*	*Z-test*	*X^2/p-value*	*n (%)*	*n (%)*	*Z-test*	*X^2/p-value*
SCAS	Males	Normal	39 (42.4)	391 (80)	-7.538*	$X^2(2) = 2016.24$ $p = <.01$	28 (30.4)	210 (80)	-8.741*	$X^2(2) = 4087.04$ $p = <.01$
		Borderline	16 (17.4)	49 (10)	2.058*		10 (10.9)	26 (10)	0.258	
		Clinical	37 (40.2)	49 (10)	7.483*		54 (58.7)	26 (10)	9.623*	
	Females	Normal	21 (35.0)	386 (80)	-7.574*	$X^2(2) = 1406.00$ $p = <.01$	10 (16.7)	220 (80)	-9.582*	$X^2(2) = 3224.00$ $p = <.01$
		Borderline	7 (11.7)	48 (10)	0.419		2 (3.3)	28 (10)	-1.683	
		Clinical	32 (53.3)	48 (10)	10.966*		48 (80.0)	28 (10)	11.700*	
MFQ	Males	Normal	55 (59.8)	364 (80)	-4.133*	$X^2(2) = 699.44$ $p = <.01$	20 (21.7)	274 (80)	-10.633*	$X^2(2) = 5877.44$ $p = <.01$
		Borderline	9 (9.8)	45 (10)	-0.025		8 (8.7)	34 (10)	-0.359	
		Clinical	28 (30.4)	45 (10)	5.296*		64 (69.6)	34 (10)	12.142*	
	Females	Normal	28 (46.7)	428 (80)	-5.750*	$X^2(2) = 800.00$ $p = <.01$	15 (25.0)	289 (80)	-8.815*	$X^2(2) = 2318.00$ $p = <.01$
		Borderline	6 (10.0)	53 (10)	0.028		4 (6.7)	36 (10)	-0.809	
		Clinical	26 (43.3)	53 (10)	7.245*		41 (68.3)	36 (10)	10.829*	
SDQ	Males	Normal	48 (52.2)	623 (80)	-5.996*	$X^2(2) = 1321.04$ $p = <.01$	24 (26.1)	1264 (80)	-11.951*	$X^2(2) = 4940.24$ $p = <.01$
		Borderline	9 (9.8)	78 (10)	-0.070		9 (9.8)	158 (10)	-0.068	
		Clinical	35 (38.0)	78 (10)	7.567*		59 (64.1)	158 (10)	15.018*	
	Females	Normal	23 (38.3)	664 (80)	-7.428*	$X^2(2) = 1118.00$ $p = <.01$	15 (25.0)	1253 (80)	-10.092*	$X^2(2) = 2054.00$ $p = <.01$
		Borderline	9 (15.0)	83 (10)	1.229		8 (13.3)	157 (10)	0.833	
		Clinical	28 (46.7)	83 (10)	8.301*		37 (61.7)	157 (10)	12.110*	
SDQ-Impact	Males	Normal	49 (53.3)	614 (80)	-5.756*	$X^2(2) = 1832.24$ $p = <.01$	22 (23.9)	1264 (80)	-12.411*	$X^2(2) = 6171.84$ $p = <.01$
		Borderline	0 (0)	77 (10)	-3.183*		2 (2.2)	158 (10)	-2.481*	
		Clinical	43 (46.7)	77 (10)	9.604*		68 (73.9)	158 (10)	17.430*	
	Females	Normal	20 (33.3)	652 (80)	-8.265*	$X^2(2) = 1754.00$ $p = <.01$	11 (18.3)	1253 (80)	-11.271*	$X^2(2) = 3066.00$ $p = <.01$
		Borderline	3 (5.0)	82 (10)	-1.278		2 (3.3)	157 (10)	-1.713	
		Clinical	37 (61.7)	82 (10)	11.254*		47 (78.3)	157 (10)	15.676*	

Note: SCAS: Spence Children's Anxiety Scale, MFQ: Mood and Feelings Questionnaire, SDQ-Total: Strength and Difficulties Questionnaire, X^2: Chi squared

[a]Frequency distribution for the community sample on SCAS, MFQ, and SDQ, was calculated using published samples (Arendt et al., 2014; Arnfred et al., 2019; Eg et al., 2018)

** p<.05 level (2-tailed).*

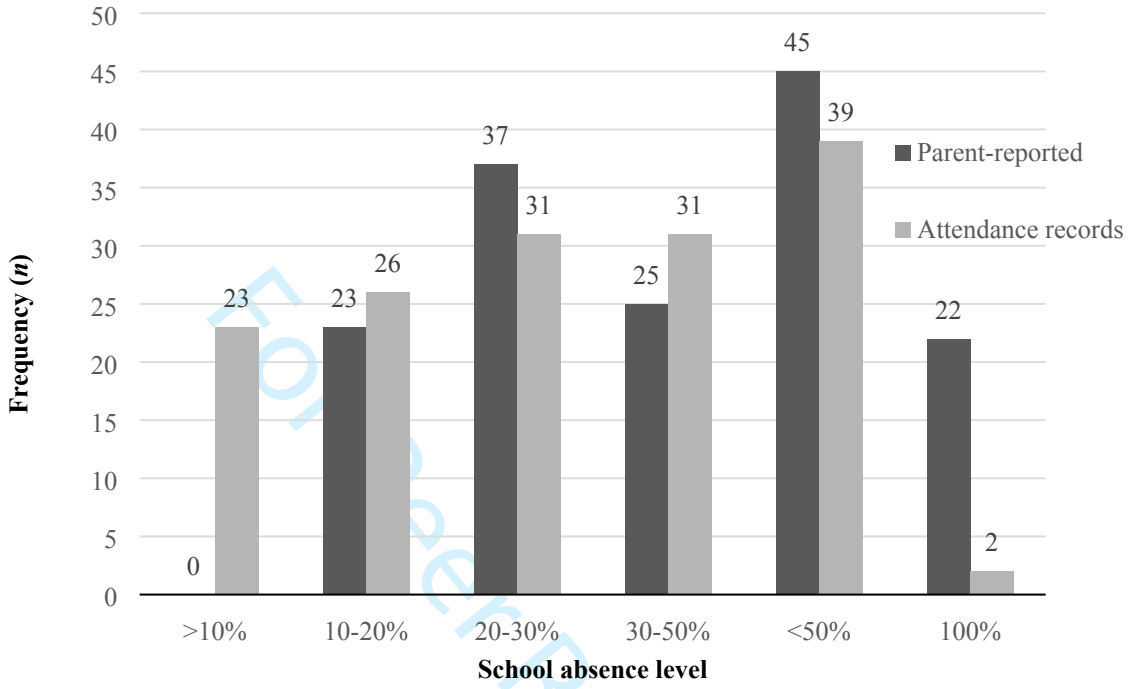

Fig. 1 *Frequency distribution of youth school absence using parent-reports and attendance records, in the previous three-months of school*

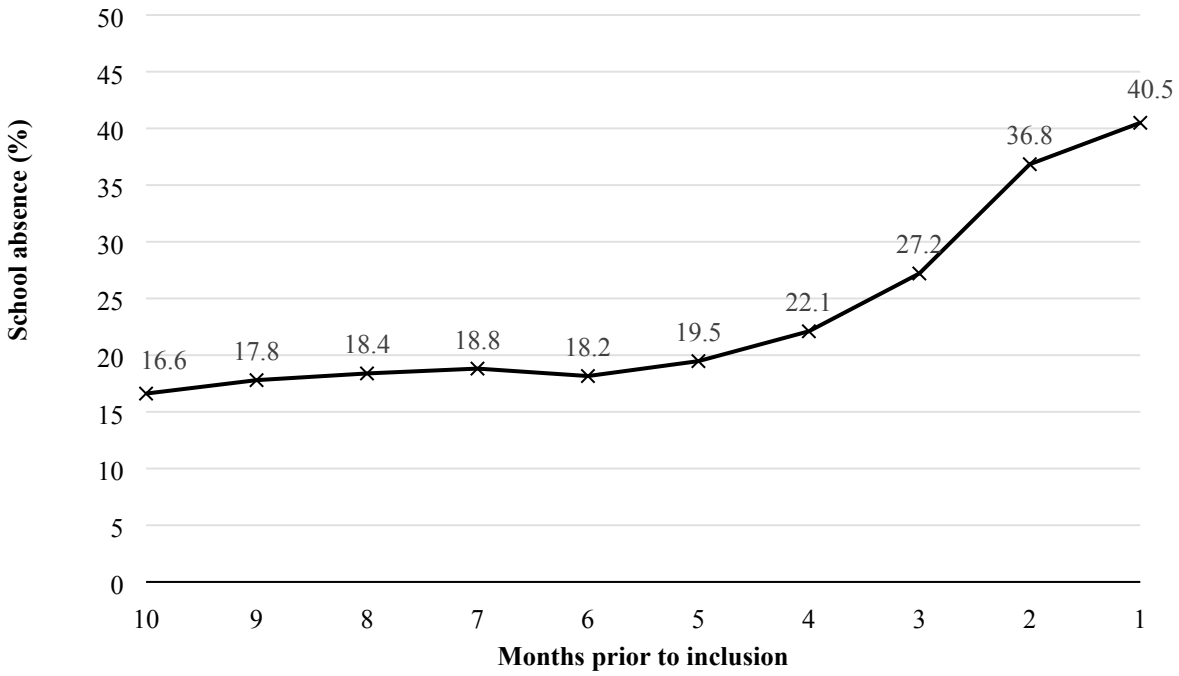

Fig. 2 *School absence per month (%) in the previous school year*

Appendix D

Paper 4

Johnsen, D. B., Lomholt, J. J., Heyne, D., Jensen, M. B., Jeppesen, P., Silverman, W. K., & Thastum, M. (2020). The effectiveness of modular transdiagnostic cognitive behavioral therapy versus treatment as usual for youths with school attendance problems: A randomized controlled trial (Draft).

Working title:

The effectiveness of modular transdiagnostic cognitive behavioral therapy versus treatment as usual for youths with school attendance problems: A randomized controlled trial

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Trial registration:

ClinicalTrials.gov Identifier: NCT03459677

Abstract

Background: School attendance problems (SAPs) often occur with mental health problems related to anxiety, depression, or behavioral problems. There is a need for effective implementable treatments that address different mental health problems. This study aimed to evaluate the effectiveness of a modular transdiagnostic cognitive behavioral therapy (CBT) for SAPs, called Back2School (B2S), compared against treatment as usual (TAU), using a randomized controlled design. **Methods:** The study follows a **t**ime (i.e., Pre, Post, 3-Month Follow-Up) × group (i.e., B2S, TAU) design. A sample of 152 youths (n = 92 males) between 6 and 16 years of age (M = 12.15 years, SD = 2.16) with SAPs and their parents, were randomized to B2S (n = 74) or TAU (n = 78). The B2S intervention was designed to increase youths' school attendance and reduce symptoms of mental health problems and was used together with a transdiagnostic CBT manual (Mind My Mind). TAU interventions consisted of both public and private treatment services. **Results:** Significant improvement in youth school attendance was found in both treatment groups. Time (i.e., Pre, Post, 3-Month Follow-Up) × group (i.e., B2S, TAU) analyses yielded no significant difference between the B2S and TAU conditions for change in youths' school attendance. Significant time × group differences were found between the two interventions in favor of the B2S condition in the change in emotional problems, conduct problems, problems with peers, overall interference of problems, and youth and parent self-efficacy related to dealing with a SAP. **Conclusions:** The present study presents the first evaluation of a transdiagnostic CBT outpatient treatment for youths with SAPs, showing positive benefits for the treatment. However, given the non-significant between-group difference related to an increase in school attendance, future studies should focus on a delineation of the factors with predictive value for successful treatment outcomes in CBT treatment for youths with SAPs.

Keywords: School Attendance Problems, Cognitive Behavioral Therapy, Transdiagnostic, Anxiety, Depression, Behavioral problems.

Background

School attendance problems (SAPs) among youths is associated with negative outcomes such as low health-related quality of life (Van Den Toren et al., 2019), poor academic achievement (Gottfried, 2014), school dropout (Schoeneberger, 2012), and later unemployment (Attwood & Croll, 2006). Approximately 14% of all Danish students miss school to the extent that their absence is regarded as a SAP (Danish Ministry of Children and Education, 2018). Studies show that the majority of youths with SAPs display a range of different mental health problems (Askeland, Bøe, Lundervold, Stormark, & Hysing, 2020; Egger, Costello, & Angold, 2003; Finning, Ukoumunne, Ford, Danielson-Waters, et al., 2019; Finning, Ukoumunne, Ford, Danielsson-Waters, et al., 2019; Vaughn, Maynard, Salas-Wright, Perron, & Abdon, 2013). Because SAPs are highly prevalent and are associated with negative outcomes and various mental health problems, there is a need for accessible, effective treatments for SAPs.

Interventions for SAPs have usually been designed for youths presenting with either truancy (i.e., non-attendance without permission, often referred to as 'skipping' school) or school refusal (i.e., non-attendance associated with emotional distress). A meta-analysis of interventions for school refusal and truancy reveal overall positive and significant effects on attendance among youths who truant (g = 0.46; Maynard, Mccrea, Pigott, & Kelly, 2016) and youths who display school refusal (g = 0.54; Maynard et al., 2018). Truancy interventions typically aim to increase school attendance by reducing truant behavior, and may involve interventions with the youth (e.g., mentoring), the parent/family (e.g., parent training), or the school/community (e.g., increasing school bonding) (DeSocio et al., 2007; Franklin, Streeter, Kim, & Tripodi, 2007; Mazerolle, Antrobus, Bennett, & Eggins, 2017). School refusal interventions have predominantly consisted of cognitive behavioral therapy (CBT) targeting youths' SAPs, and symptoms of emotional distress (e.g., symptoms of anxiety and/or depression), often involving, youths, parents and schools in treatment (Heyne et al., 2002; Melvin et al., 2016). School refusal has also been treated using multimodal treatment approaches, including elements of CBT, family therapy, pharmacotherapy, and school-related counseling (McShane, Bazzano, Walter, & Barton, 2007; Reissner et al., 2015).

Although truancy and school refusal are often regarded as different types of SAPs, they are not mutually exclusive and may be associated with comorbid mental health problems, such as anxiety, depression, and/or behavioral problems (Egger et al., 2003). In light of the comorbid mental health problems found among youths with SAPs, more comprehensive intervention approaches that infuse treatment for several mental health problems are needed (Kearney & Graczyk, 2020).

Transdiagnostic CBT interventions using a modular approach have been developed to target anxiety, depression, and behavior problems within the same treatment protocol (Weisz et al., 2012). In a randomized controlled trial (RCT), Weisz et al. (2012) showed that transdiagnostic CBT treatment outperformed both standard evidence-based CBT and treatment as usual (TAU) in the treatment of youth symptoms of anxiety, depression and behavioral problems. Findings from studies of CBT treatments for youths with SAPs, show increases in youths school attendance, reductions on different symptoms of mental health problems (e.g., anxiety, depression, and behavioral problems), and an increase in school-related self-efficacy (Hannan, Davis, Morrison, Gueorguieva, & Tolin, 2019; Heyne et al., 2002; Melvin et al., 2016; Reissner et al., 2015; Walter et al., 2010). These findings suggest that CBT treatment is a viable treatment option for youths with SAPs that present with different mental health problems. However, no study has evaluated a transdiagnostic CBT treatment for SAPs.

Youths with SAPs are often diagnosed with mental disorders, and receive treatment in an inpatient or intensive outpatient care based on their SAPs and mental health disorders (Hannan et al., 2019; Heyne et al., 2002; Reissner et al., 2015; Walter et al., 2010). However, SAPs are not equivalent to mental health disorders, and youths might seek treatment for SAPs, without having a previously diagnosed mental health disorders (Lomholt et al., 2020). In a treatment study by Lomholt et al., (2020), only 8 out of 24 youths seeking treatment for SAPs had a psychiatric diagnosis prior to inclusion. Nonetheless, the majority of the sample presented with clinical symptoms of anxiety, depression, or behavioral problems. They also found a significant reduction in these symptoms, as well as an increase in school attendance after treatment (Lomholt et al., 2020). These findings suggest that using mental health disorders as an inclusion criterion

for providing SAP treatment could lead to the exclusion of youths struggling with SAPs and sub-clinical symptoms of mental health problems.

There is a need for evidence-based treatments for SAPs, and a transdiagnostic intervention could meet the needs of this youth population, regardless of the nature of the concurrent mental health problems or disorders. Treatment informed by the presence of youths SAPs could provide an early and preventive treatment (Ingul, Havik, & Heyne, 2019; Kearney & Graczyk, 2014), and tested in an outpatient setting could increase treatment effectiveness and reduce costs (Reissner et al., 2015). Therefore, we developed the Back2School (B2S) program, an outpatient modular transdiagnostic CBT intervention for youths with SAPs. As well as addressing a range of youth mental health problems, the B2S program emphasizes collaboration with school professionals as part of the intervention. B2S was already found to be a feasible and acceptable intervention for SAPs, finding a significant increase in school attendance and reduction in youth mental health problems in a non-randomized feasibility study (Lomholt et al., 2020). The primary aim of the current study was to conduct a more robust test of the effectiveness of B2S, using a randomized controlled trial (RCT) design with an active control group receiving TAU. We hypothesized that the B2S treatment would be superior to TAU in increasing school attendance, and in decreasing symptoms of emotional and behavioral problems. We further hypothesized that the B2S treatment would show a significantly higher increase in youths' and parents' self-efficacy related to SAPs compared to TAU.

Method

Trial Oversight

The current RCT evaluated the effectiveness of the B2S intervention compared against treatment as usual (TAU). The B2S treatment is a modular CBT treatment designed to combine with disorder-specific and generic CBT modules from a transdiagnostic modular CBT-program (The Mind My Mind [MMM]: Jeppesen et al., 2017]).

Participants

Participants included 152 youths (n = 92 males) between 6 and 16 years of age (M = 12.15 years, SD = 2.16) with SAP, and their parents. Participants were recruited between August 2017 and March 2019,

with the last follow-up assessment in December 2019. All participating families were self-referred for treatment for SAP, and eligibility for participation was assessed through a brief online screening of the inclusion criteria. The inclusion criteria were: (a) youths enrolled in a public school within the region of central Denmark; (b) aged 6–16 years and in 0–9th grade (excluding the second semester of ninth grade); (c) parents reported more than 10% school absence during the previous three months of school; (d) the youth and at least one parent who understood and spoke Danish sufficiently to participate in treatment and complete questionnaires; (e) at least one parent was motivated to work on increasing the youth's school attendance; (f) youths and parents were committed to participate in assessment and intervention procedures, and willing to accept random assignment to intervention; and (g) the holders of the parental rights gave written consent for participation. To assess the eligibility related to the third inclusion criterion, parents were asked in the online screening to indicate the amount of school their child had missed during the last three months, using the following six categories: 'Less than 10% (less than six absent days)', '10-20% (approximately 6-12 absent days)', '20-30% (approximately 12-18 absent days)', '30-50% (approximately 18-30 absent days)', '>50% (more than 30 absent days)', and '100% (the child has not attended school in the last three months)'. As presented in Figure 1, a total of 204 families were assessed for eligibility.

Measures

Measurement of outcomes (primary and secondary) was conducted prior to randomization (Pre), immediately after interventions (Post), and at three months following treatment (FU). To increase retention of participants in the TAU group, the families were offered a gift card (value 200 DKK/26 EUR) after completing the Post and/or FU assessment. See the study protocol for detailed descriptions of the included measures (Thastum et al., 2019).

Primary outcome measures

Hours of school attendance was assessed using parent retrospective reports of the youths' hours of school attendance during the ten school days immediately prior to Pre, Post, and FU. A percentage of hours of school attendance was calculated by tallying the attended hours in the previous ten school days. *Days of*

school attendance was assessed using attendance data provided by the local municipalities' school attendance registries (i.e., registered as 'in attendance' or 'absent'). A percentage of days of school attendance was calculated by tallying the days of attendance in the last ten school days.

Secondary outcome measures

Youth symptoms of emotional, behavioral, social difficulties and the interference caused by these difficulties were assessed as secondary outcomes using the extended version of the Strength and Difficulties Questionnaire (youth and parent report [SDQ and SDQ-P]; Goodman, 1997). *Youth self-efficacy* for handling school-related situations was measured using the Self-Efficacy Questionnaire for School Situations (SEQ-SS; Heyne et al., 1998). *Parental self-efficacy* for responding to their child's SAPs was measured using the Self-efficacy Questionnaire for Responding to School Attendance Problems (SEQ-RSAP; Heyne, Maric, & Totsika, 2016).

Additional measures

Parents provided data on demographic background variables at Pre (e.g., developmental delays, living situation). Possible adverse events and overall treatment satisfaction were assessed in both groups at Post assessment using the *Experience of Treatment Satisfaction Questionnaire* (ESQ) developed for the current study.

Interventions

Back2School is a manualized CBT program aimed at helping youths with SAPs increase their school attendance, by involving the youths, their parents, and the schools in treatment. The B2S treatment is described in detail in the study protocol (Thastum et al., 2019). In short, B2S treatment was specifically developed to treat SAPs, and aspects of the @SCHOOL intervention (Heyne, Sauter, Ollendick, Van Widenfelt, & Westenberg, 2014) and the When Children Refuse School intervention (Kearney & Albano, 2007) were included in the treatment. The B2S treatment was used together with the transdiagnostic MMM manual, which includes evidence-based CBT methods organized into disorder-specific modules to target subclinical or clinical levels of anxiety, depression, behavioral disturbance, and trauma-related problems

(Jeppesen, 2017). The B2S and MMM manuals provide guidelines to help therapists adjust interventions to the developmental level of the youth (e.g., case examples of working with younger children vis-à-vis older adolescents).

Treatment as usual. In accordance with Danish law, schools are responsible for helping or assisting youths with SAPs (Danish Ministry of Children and Education, 2017). TAU interventions were therefore initiated and provided by the youth's school of enrollment, using the available resources within the school system. Families were not restricted in seeking treatment or assistance outside the school, and thus TAU could include treatment from private psychologists, psychiatric hospitals, or physicians. Inquiries regarding the interventions received in the TAU condition were assessed using a *semi-structured telephone interview* with the parents or legal guardian/caretaker in the TAU group. The interviewers gathered information regarding the treatment type, who provided the treatment, number of meetings, and duration of treatment. For an overview of the received interventions, see the *Interventions received* section.

Procedure

The Department of Psychology and Behavioral Sciences at Aarhus University, where the study was conducted, did not have an institutional review board, so in accordance with Danish procedures, the Central Denmark Regional Ethics Committee was consulted. In keeping with the regulations of the health research committees in Denmark, questionnaire-based studies are often denied access to a full evaluation. However, a study protocol was provided to the Central Denmark Regional Ethics Committees who confirmed, that the project was not encompassed by the term 'Bio-medical research' and as such not eligible for Committee review, meaning that the study needed no further approval. The project was registered at the Danish Data Protection Agency (Ref no. 2016-051-000001). Eligibility for study participation was assessed using an online screening instrument to determine eligibility according to the inclusion criteria, completed by a parent or another legal guardian/caretaker. Participants meeting inclusion criteria received a complete description of the study, gave written informed consent, and were consequently randomized to one of the two treatment groups: B2S or TAU.

The randomization procedure was performed using a computer-generated random digit procedure with two possibilities (B2S and TAU). The primary treatment outcome, increase in school attendance, can be affected by youth age and by the amount of school non-attendance prior to treatment (Heyne, Sauter, & Maynard, 2015). Therefore, to ensure balanced groups, the randomization was stratified on the presence of age (first to fourth grade [younger] or fifth to ninth grade [older]) and amount of school non-attendance (< 50% [low] or > 50% [high]). To maintain similar treatment group sizes, the randomization was conducted using permuted block randomization. Randomization was concealed from the research team overseeing the RCT study until interventions were assigned. Following randomization to either B2S or TAU, all participants received written and verbal information regarding treatment allocation from the research team. Participants in the B2S group were notified of the time and place of the B2S treatment start. Participants in the TAU group were urged to contact their school to start treatment, and the associated schools and the school leaders were also notified and informed of the randomization results. The study was registered at clinicaltrials.gov, and the study protocol is published (Thastum et al., 2019).

The B2S treatment was delivered by eight psychologists, and 37 clinical psychology graduate students functioning as co-therapists conducted the B2S treatment. Psychologists and co-therapists received a 6-day training course regarding assessment and the two treatment manuals (B2S and MMM). During the trial period of two years, four 1-day sessions were held by the research team to brush-up on assessment or treatment specific techniques. In total, each psychologist and co-therapist received between 60 and 80 hours of training. All psychologists and co-therapists received weekly face-to-face group case supervision by specialists in clinical child psychology. Prior to the current study, all psychologists and co-therapists had limited knowledge and experience with CBT treatment and were regarded as novice CBT therapists.

Statistical analysis

The study was powered to provide 80% power at the 5% (two-tailed) significance level to detect a standardized effect size within the range of 0.46-0.54 difference in the primary outcome of change in school attendance (based on Maynard et al., 2018; 2013). To account for the expected attrition rate of 10% (Heyne et al., 2002b; King et al., 1998; Last et al., 1998; Wu et al., 2013), the required sample size of 70

participations per treatment group was raised to 80 per group. IBM SPSS Statistics, v.26 (IBM, Chicago, IL) was used for all analyses. Mixed linear models (MLMs) were used to compare treatment groups (i.e., B2S and TAU) over time (i.e., Pre, Post, FU) on all continuous outcome measures. MLMs were used to determine the time × group interaction effects and the effects of treatment groups over time. MLMs allow handling the time variable as a time-varying covariate. Thus, the time variable was calculated from each participant's day of assessment for all time-points. MLMs tolerate missing values and do not compromise statistical power. All MLMs were estimated using the maximum likelihood method and based on the intention-to-treat sample. All models included a random intercept, and the slope was specified as random if improving the model fit evaluated by a significant change in the -2 log-likelihood (-2LL) fit statistics (Heck, Thomas, & Tabata, 2013). A visual inspection of the data and an inspection of the model indices for the time variable will determine the best fit for the time variable. Unadjusted mean changes and differences in mean changes with corresponding 95% CIs were estimated for significant time × group interactions. The mean score of ESQ was compared between treatment groups using an independent *t*-test. Effect sizes were calculated for all outcome measures expressed as Cohen's *d*, with 0.2, 0.5, and 0.8 considered small, medium, and large effect sizes, respectively. Cohen's *d* was derived from the *F* test calculated as $d = 2 \times \sqrt{(F / df)}$.

Results

[INSERT FIGURE 1. HERE]

Participant flow and baseline comparisons

A total of 204 families were assessed for eligibility. Fifty families were excluded, 19 of which did not meet the inclusion criteria, 24 declined to participate despite their initial interest, and seven were unreachable by phone following the eligibility assessment. One-hundred-fifty-four families met inclusion criteria and were randomly assigned to B2S (n = 75) or TAU (*n* = 79). Two families dropped out prior to Post assessments (B2S: *n* = 1, TAU: *n* = 1). Both families retired their consent to participate in the study. The number of available participants for each treatment arm is shown in Figure 1. The participant baseline

demographics are presented for both treatment groups in Table 1. The groups did not differ significantly on any outcome measures at baseline (all *p*'s > .05).

[INSERT TABLE 1. HERE]

Interventions received

Back2School. All participating families in the B2S group (*n* = 74) participated in the clinical assessment. Participating families in the B2S group completed a mean of 10.0 (SD = 2.45, range 0-11) of the treatment sessions and booster session. Fifty-eight (*n* = 58/74) families completed all treatment sessions and the booster session. On average, families completed a mean of 3.15 (SD = 1.08, range 0-4) of the four school meetings. Thirty-seven (*n* = 37/74) families completed all school-meetings. If the B2S psychologists deemed it necessary, families were offered an extra meeting or treatment session after treatment (e.g., to coordinate future treatment with other professionals, or to ensure the wellbeing of the families). Eighteen families (*n* = 18/74) received at least one extra meeting or treatment session, with a mean of 1.7 (SD = 1.2, range 0-5) extra meetings or treatment sessions. The mean number of sessions and meetings received in the B2S treatment was 14.6 (SD = 2.3, range 1-18), and the mean number of hours of intervention received was 15.0 (SD = 3.9, range 1.5-20.6) for the families in the B2S group. From treatment allocation to the last completed treatment session (excluding the booster session), the average treatment time was 4.2 months. Fidelity checks were assessed for the B2S intervention using randomly selected videos, rating only the psychologists' competence relating to conducting CBT, and their adherence to the treatment manuals (i.e., B2S and MMM) using the *Competence and Adherence Scale for Cognitive Behavioral Therapy for Transdiagnostic Modular based Manuals* (CAS-CBT-TMM; Bjaastad et al., 2015; Rasmussen & Puggaard, 2019). The global score of *competence* was rated on a 7-point scale (0 = *Poor skills*, 6 = *Excellent skills*), finding an acceptable level of psychologist competence (*M* = 3.28, SD = 1.30). The global score of *adherence* was rated on a 7-point scale (0 = *None*, 6 = *Thorough*), finding an acceptable level of psychologist adherence (*M* = 3.49, SD = 1.28). The accuracy of the inter-rater reliability was calculated using intraclass correlations (ICC) and showed good agreement for ratings of adherence (ICC = .633) and competence (ICC = .620) (Cicchetti, 1994).

Treatment as usual. Sixty (n = 60/78) families completed the semi-structured interview following treatment, and the remaining families were either unreachable or declined to participate in the interview. The TAU families received treatment or help provided through public services (n = 59/60), and private services (n = 19/60). Of the responding families, 56/60 families reported receiving help from their schools (e.g., school meeting or homeschooling), 41/60 from their municipality (e.g., meeting with a school psychologist, or social worker), 24/60 received help provided by the region (e.g., psychiatric assessment or inpatient care), and 19/60 from private providers (e.g., private psychologist, or hypnotists). Participants in the TAU group reported that they, in the period from Pre to Post assessment, received on average a mean of 13.4 hours (SD = 21.6, range 1-116) of intervention.

Primary outcomes.

Hours of school attendance. As shown in Table 2, there was no significant time × group interaction effects, related to change in the parent-reported hours of school attendance (F = 3.3, p = .07, d = 0.32). There was a significant increase in hours of school attendance from Pre to FU, in both the B2S (F = 25.4, p < .01, d = 0.73) and TAU (F = 11.9, p < .01, d = 0.60) group.

Days of school attendance. No significant time × group interaction effects was found, related to a change in days of school attendance (F = 0.4, p = .53, d = 0.08). There was a significant increase in days of school attendance from Pre to FU, in both the B2S (F = 8.5, p < .01, d = 0.54,) and TAU (F = 12.7, p < .01, d = 0.68) group. See Table 2 and Figure 2.

[INSERT FIGURE 2. HERE]

Secondary outcomes. *Emotional, behavioral, and social difficulties (SDQ and SDQ-P).* As shown in Table 2, there were significant time × group interactions related to the change in difficulties on youth rated SDQ in favor of the B2S group. Significant interactions were found for the total scale (F = 10.51, p < .01, d = 0.58), emotional symptoms (F = 8.10, p < .01, d = 0.51), problems with peers (F = 8.02, p < .01, d = 0.38), and impact scale (F = 4.91, p = .03, d = 0.29). For the parent reported SDQ-P, there were significant time × group interactions for the total scale (F = 8.71, p < .01, d = 0.47), emotional symptoms

(F = 4.33, p = .04, d = 0.35), conduct problems (F = 6.39, p = .01, d = 0.32), and impact scale (F = 4.43, p =.04, d = 0.36). See Table 2, for effects of treatment groups over time.

Self-Efficacy (SEQ-SS and SEQ-RSAP). There were significant time × group interactions related to change in youth rated self-efficacy, in favor of the B2S group for the total scale (F = 7.63, p < .01, d = 0.46), the academic/social stress scale (F = 7.12, p < .01, d = 0.47), and the separation/discipline scale (F = 4.87, p = .03, d = 0.29). For the parent rated SEQ-RSAP a significant interaction was found (F = 12.43, p < .01, d = 0.53). See Table 2, for effects of treatment groups over time.

As shown in Table 3, the explorative post hoc analysis for the significant time × group interactions showed that the mean change difference was markedly higher in the time period from Pre to Post for all measures, with the exception of the youth reported SDQ-Impact were the mean change difference was highest from Post to FU.

[INSERT TABLE 2 HERE]

Adverse effects and treatment satisfaction.

Based on the parents' responses on the *ESQ* in the B2S (n = 65/74) and TAU (n = 58/78) group, none of the parents in the B2S group reported that the treatment had caused their child to feel worse, while 3/58 parents in the TAU group reported that the treatment had caused their child to feel worse. One (n = 1/65) parent in the B2S group and 2/58 parents in the TAU group reported feeling worse due to the received treatment. Parents in the B2S (M = 16.28, SD = 3.57) group rated their satisfaction significantly higher compared to parents in the TAU (M = 9.50, SD = 4.92) group (t(103) = 8.65, p < .01).

Discussion

The present effectiveness study compared the treatments of youths with SAPs receiving manualized modular transdiagnostic treatment for youth with SAPs (B2S), with those receiving standard public and private services (TAU). Contrary to our expectations, the B2S treatment did not confer a significant benefit in terms of an increase in school attendance, compared to TAU. Although the effectiveness of B2S related to increasing school attendance showed high within-group effect sizes for hours (d = 0.73) and days of school attendance (d = 0.54), the TAU group also achieved similar high within-group effect sizes (hours: d

= 0.60, days: d = 0.68) related to increasing school attendance. Thus, both B2S and TAU produced significant improvements in school attendance, with no significant differences between groups. However, B2S outperformed TAU on most of the measures of emotional, behavioral, and social difficulties. With significant between-group effect sizes related to the improvements in youth- and parent-reported total ratings of problems, emotional symptoms, and impact of problems (range: d = 0.29-0.58). There were also significant between-group effect sizes for youth-rated social difficulties related to peers (d = 0.38), and youth conduct problems rated by parents (d = 0.32). Furthermore, youths receiving B2S also presented significantly higher increases in both youth and parent self-efficacy, with significant between-group effect sizes for youths (range: d = 0.29 – 0.47) and parents (d = 0.53). These findings lend partial support to our initial hypothesis, finding B2S superior to TAU in decreasing youth symptoms of emotional and behavioral problems and increasing youth and parent self-efficacy related to SAPs, but not in increasing youth school attendance.

The findings from the current study need to be considered in light of the interventions received in the two treatment groups. The TAU group received a wide range of treatments and interventions from public and private service providers, with a mean of 13.4 hours (SD = 21.6, range 1-116) received treatment, close to the mean hours received in the manualized B2S treatment (M = 14.6, SD = 2.3, range 1-18). The specific contents of each intervention received in the TAU interventions received are unknown to us. However, per Danish law, public schools are obliged to, in collaboration with the parents, help youths attend school and receive their compulsory education (Danish Ministry of Children and Education, 2017). This obligation is reflected in the large proportion of youths receiving interventions provided by the schools (n = 56/60, M = 11.0 hours, SD = 22.0). We, therefore, expect that many youths and families in the TAU group received interventions from schools that predominantly focused on increasing youths' school attendance, complying with Danish law. Conversely, the youths in the B2S group received a therapeutic intervention working systematically to both increase school attendance, and reduce symptoms of anxiety, depression, and behavioral problems. The possible difference in the two received interventions could,

therefore, explain why there were no significant between-group effects found related to school attendance, while several between-group effects were found for the secondary outcome measures.

Another possible explanation for the non-significant differences in the increase of school attendance between the B2S treatment and TAU could be related to the fact that the TAU group achieved unexpected high within-group effect sizes for the increase in school attendance. Our findings showed that both the B2S and TAU group achieved within-group effect sizes equal to or exceeding the overall effect-sizes found in previous meta-analyses for truancy (d = 0.46) and school refusal (d = 0.54) interventions targeting school attendance (Maynard et al., 2018, 2013). It is possible that the therapists and service providers in the TAU group were equally effective in reducing school attendance as the B2S group due to high clinical experience and general competence among therapists and service providers in the schools and the municipalities. Whereas, the content (e.g., graded exposure, and disorder-specific modules) and the systematic approach of the B2S treatment, could have contributed to the significant benefit found for the B2S treatment related to the secondary outcomes.

An interesting finding was that although most youths in the TAU group receive intervention from public service providers (n = 59/60), a notable proportion (n = 19/60) sought help from private providers, such as treatment from private psychologists (n = 14/60, M = 5.8 hours, SD = 5.6). The considerable proportion of TAU participants seeking treatment from private providers could suggest that the available public services were, in some instances, not readily available due to high demand or was insufficient to meet the needs of the youth and families.

The study has several strengths, among them the large sample of youths' with SAPs, school psychologists conducting the B2S providing ecological validity, and the TAU interventions comprised a highly active comparator. However, there are limitations related to the current study that warrant consideration when interpreting the results. The first and most central limitation is related to the utilized school attendance measures, as both the self-reported and registry-based school attendance data are subjected to biases (Keppens, Spruyt, & Dockx, 2019; Stone, Bachrach, Jobe, Kurtzman, & Cain, 2000). In a previous examination of the current sample's school attendance (i.e., three months of school prior to

inclusion), discrepancies were found between parent-reported, and registry-based attendance data were the parents reported lower levels of school attendance compared to the registry data (Johnsen et al., 2020). Acknowledging the potential limitations related to school attendance registry data, we also included parent-reported hours of attendance as a second primary measure of school attendance (Lomholt et al., 2020). Regardless, there are possible biases related to both measures, and the results pertaining to school attendance need to be interpreted with caution.

Secondly, like other TAU comparators, the current TAU condition can be viewed as an active set of interventions that could adapt to new theoretical influences, like the current B2S program (Löfholm, Brännström, Olsson, & Hansson, 2013). Both the psychologists conducting the B2S treatment and the B2S school-meetings could have attributed to an improvement in interventions received in the TAU group. The psychologists worked only part-time on the B2S project and were concurrently working as school psychologists in the municipalities during the study period. Although the psychologists were instructed to refrain from using treatment elements from the B2S program in their work as school psychologists, it is possible that experiences from the B2S treatment influenced the treatment received in the TAU group. The content and procedures from the B2S school meetings may also have been applied for the youth also in the TAU group, as thirty of the 44 different schools involved in the study had youth enrolled from both the B2S and TAU group. Following the treatment allocation to the TAU group, schools were informed of the randomization outcome and notified that the families had been encouraged to contact them for help with the youths' SAPs. This procedure may have influenced and possibly improved the support families in the TAU group subsequently received from the schools. In summary, it is a possibility that elements from the B2S treatment or the study procedures improved the treatment effect achieved in the TAU group.

Although the current sample of youth with SAPs was included using no inclusion criterion of mental health problems, the sample consisted of youth with high levels of school absence, and clinical levels of emotional and behavioral symptoms, and considerable impact on their functioning (Johnsen et al., 2020). The modular transdiagnostic CBT treatment for youths with SAPs, conducted in an outpatient setting, showed positive outcomes in terms of school attendance, emotional, behavioral, and social difficulties, the

overall impact of problems, and self-efficacy. These findings have several clinical implications. The large sample shows that there is a demand for SAPs treatments and that the B2S treatment is a viable treatment option for youths with SAPs in an outpatient setting. Furthermore, the psychologist conducting the B2S treatment were considered novices in conducting CBT treatment. However, through a short training and introduction to CBT treatment and the treatment manuals, coupled with weekly supervision, the youths in the B2S group showed positive improvements related to both school attendance and in symptoms of mental health problems. Viewed in light of the acceptable measures of competence and adherence (Bjaastad et al., 2016) and the significantly higher parent-rated treatment satisfaction in the B2S group, these findings propose that with proper training and supervision, the B2S treatment could be administered successfully by non-clinical experts in an outpatient setting.

In closing, the present study presents the first evaluation of a transdiagnostic CBT outpatient treatment for youths with SAPs tested using a rigorous experimental design. Contrary to our expectations, the B2S treatment did not significantly improve our primary outcome, the school attendance, compared to TAU. The included a sample of youths seeking treatment for SAPs, showed significant moderate and large improvements related to a reduction in school attendance, and a significant advantage to the B2S treatment over TAU in reducing youths emotional, behavioral, social difficulties, the impact of problems, and parent and youth self-efficacy. However, contrary to our expectations, the B2S treatment did not significantly improve our primary outcome, the school attendance, compared to TAU. Future follow-up studies of the current sample's school attendance will be essential to see if the B2S holds a long-lasting positive effect. Finally, given the non-significant difference between the B2S and TAU group related to an increase in school attendance, future studies should focus on a delineation of the factors with predictive value for successful treatment outcomes in the B2S treatment, as well as subgroup analysis. Identifying what works in the B2S program and for whom, could ultimately improve the B2S treatment, and increase the positive treatment effects.

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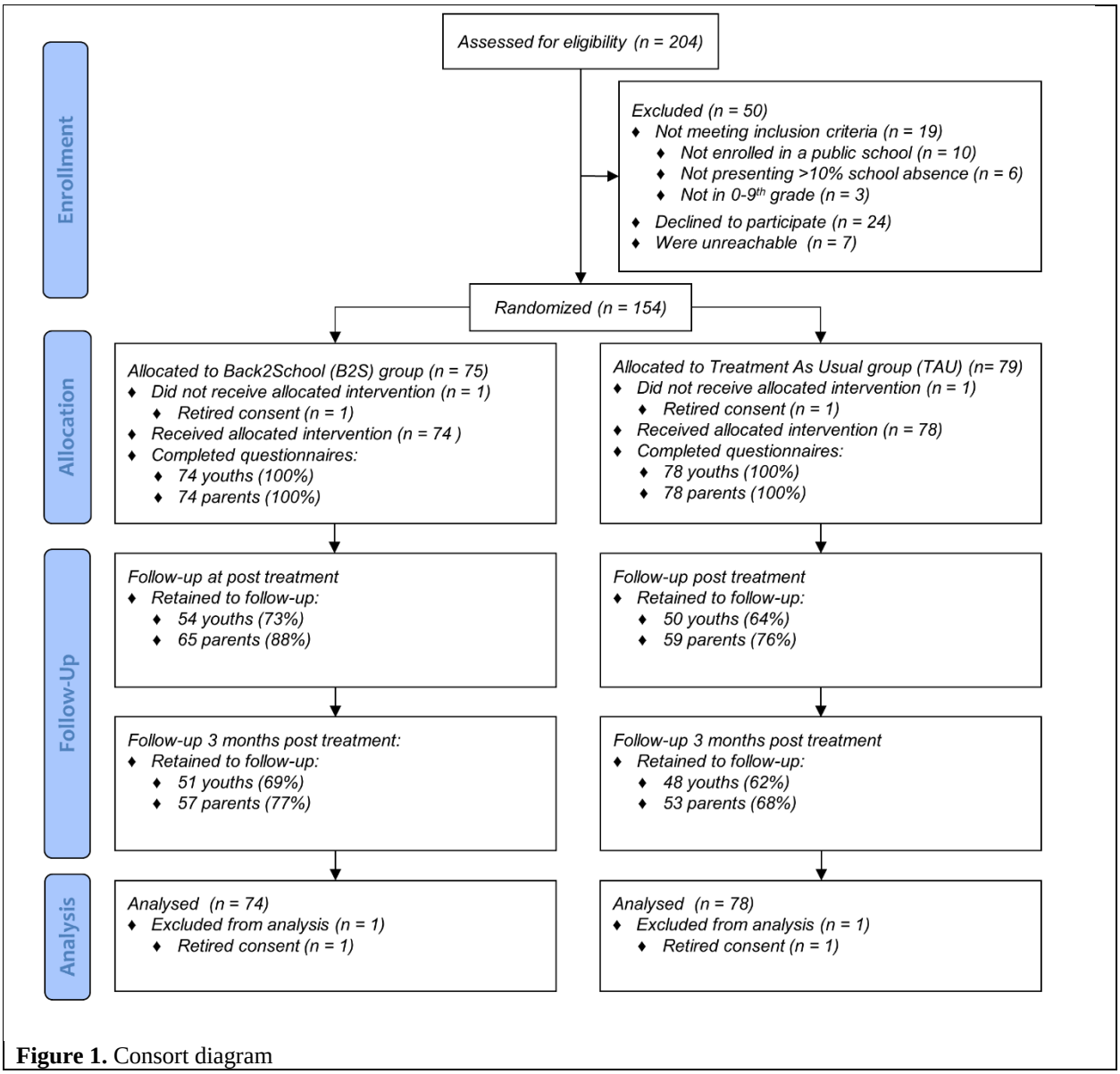

Figure 1. Consort diagram

Table 1. Sample baseline demographics for both treatment groups

	B2S (*n* = 74)	TAU (*n* = 78)
Age, mean (SD)	12.3 (2.1)	12.0 (2.2)
Gender, males, no. (%)	46 (62.2)	46 (59.0)
Level of non-attendance previous 3 months:		
High (>50%), no. (%)	38 (51.4)	47 (60.3)
Low (<50%), no. (%)	36 (48.6)	31 (39.7)
Grade:		
1st-4th grade, no. (%)	13 (17.6)	21 (26.9)
5th-9th grade, no. (%)	61 (82.4)	57 73.1)
Physical illness (e.g., asthma, allergies), no. (%)	15 (20.3)	19 (24.4)
Developmental delays[a], no. (%)	14 (18.9)	26 (33.3)
Developmental or psychological disorder:		
Anxiety disorder, no. (%)	10 (13.5)	8 (10.3)
Depressive disorder, no. (%)	8 (10.8)	0 (0.0)
Attention Deficit Hyperactivity Disorder, no. (%)	8 (10.8)	8 (10.3)
Autism Spectrum Disorder, no. (%)	6 (8.1)	6 (7.7)
Learning disability, no. (%)	7 (9.5)	3 (3.8)
Intellectual disability, no. (%)	1 (1.4)	2 (2.6)
Conduct disorder, no. (%)	0 (0)	1 (1.3)
Other[b], no. (%)	1 (1.4)	3 (3.8)
Comorbidity, ≥2 disorders, no. (%)	13 (17.6)	10 (12.8)
Any disorder, no. (%)	22 (29.7)	18 (23.1)
Living arrangement:		
Both parents, no. (%)	41 (55.4)	43 (55.1)
Single parent, no. (%)	22 (29.7)	19 (24.4)
Other/reconstituted family, no. (%)	11 (14.9)	16 (20.5)
Number of siblings in the household:		
Only index child, no. (%)	20 (27.0)	14 (17.9)
1, no. (%)	27 (36.5)	38 (48.7)
2, no. (%)	23 (31.1)	23 (29.5)
≥3, no. (%)	4 (5.4)	3 (3.8)

Note: B2S = Back2School, TAU = Treatment As Usual, SAP = School Attendance Problems, SCAS = Spence Child's Anxiety Scale, MFQ = Mood and Feelings Questionnaire, SDQ = Strength and Difficulties Questionnaire.
[a]Language (B2S: n = 6, TAU: n = 11), Motor skill (B2S: n = 4, TAU: n = 4), Social interaction (B2S: n = 2, TAU: n = 6), Learning (B2S: n = 1, TAU: n = 1)
[b]Functional Somatic Symptoms (B2S: n = 1), Trauma (TAU: n = 2), Tourette (TAU: n = 1)

Table 2. Means, standard deviations and main treatment effects for primary, secondary, and additional outcomes.

	Group	Pre	Post	FU	Time	Time-by-group
		M (SD) [valid n]	*M* (SD) [valid n]	*M* (SD) [valid n]	*F*, *P* (Cohen's *d*)	*F*, *P* (Cohen's *d*)
School Attendance – Hours, Two weeks (%)	B2S	30.86 (28.41) [74]	48.33 (35.73) [65]	61.08 (36.54) [52]	25.4, .001 (0.73)	3.26, .073 (0.32)
	TAU	35.01 (29.45) [68]	39.83 (36.73) [56]	48.63 (37.54) [53]	11.9, .001 (0.60)	
School Attendance - Days, Two weeks (%)	B2S	63.11 (32.94) [74]	74.73 (27.76) [74]	73.51 (30.99) [74]	8.5, .004 (0.54)	0.39, .533 (0.08)
	TAU	56.15 (33.74) [78]	64.87 (35.74) [78]	72.05 (35.18) [78]	12.7, .001 (0.68)	
SDQ - Total	B2S	15.07 (6.30) [74]	12.00 (6.47) [54]	11.00 (5.93) [49]	43.7, .001 (1.68)	10.51, .002 (0.58)
	TAU	14.18 (6.32) [78]	12.31(5.83) [49]	11.98 (6.42) [48]	7.2, .009 (0.68)	
Emotional symptoms	B2S	5.82 (2.66) [74]	4.11 (2.81) [54]	3.78 (2.28) [49]	51.3, .001 (1.87)	8.10, .005 (0.51)
	TAU	5.21 (2.72) [78]	4.29 (2.39) [49]	4.08 (2.76) [48]	10.1, .002 (0.80)	
Conduct problems	B2S	2.08 (1.73) [74]	1.56 (1.44) [54]	1.45 (1.47) [49]	11.5, .001 (0.63)	0.74, .390 (0.12)
	TAU	2.04 (1.70) [78]	1.53 (1.34) [49]	1.40 (1.50) [48]	8.5, .005 (0.71)	
Hyperactivity/Inattention	B2S	4.50 (2.71) [74]	4.13 (2.73) [54]	3.78 (2.38) [49]	14.7, .001 (1.00)	2.09, .151 (0.26)
	TAU	4.55 (2.68) [78]	4.06 (2.58) [49]	3.96 (2.53) [48]	1.9, .173 (0.34)	
Problems with peers	B2S	2.66 (1.90) [74]	2.20 (1.81) [54]	2.00 (1.68) [49]	9.3, .003 (0.57)	8.02, .005 (0.38)
	TAU	2.38 (1.90) [78]	2.43 (1.90) [49]	2.54 (2.06) [48]	1.0, .330 (0.19)	
Prosocial Behavior	B2S	7.45 (1.46) [74]	7.78 (2.04) [54]	8.08 (1.68) [49]	5.0, .027 (0.42)	0.59, .445 (0.10)
	TAU	7.42 (2.01) [78]	7.45 (1.74) [49]	7.56 (1.70) [48]	1.2, .273 (0.22)	
Impact	B2S	2.76 (2.87) [74]	2.30 (2.66) [54]	1.24 (1.83) [49]	11.5, .001 (0.60)	4.91, .028 (0.29)
	TAU	2.54 (2.65) [78]	1.71 (1.87) [49]	2.42 (3.08) [48]	0.3, .572 (0.11)	
SDQ-P - Total	B2S	16.49 (5.52) [74]	12.85 (6.23) [65]	11.44 (5.97) [57]	61.7, .001 (1.77)	8.71, .004 (0.47)
	TAU	15.19 (5.96) [78]	12.81 (5.49) [59]	12.33 (6.04) [53]	16.3, .001 (0.90)	
Emotional symptoms	B2S	6.73 (2.50) [74]	4.80 (2.67) [65]	4.35 (2.23) [57]	62.3, .001 (1.91)	4.33, .039, (0.35)
	TAU	6.32 (2.46) [78]	5.05 (2.53) [59]	4.48 (2.65) [53]	27.9, .001 (1.27)	
Conduct problems	B2S	2.38 (1.89) [74]	1.77 (1.78) [65]	1.45 (1.63) [57]	25.6, .001 (1.11)	6.39, .012 (0.32)
	TAU	1.95 (1.92) [78]	1.54 (1.48) [59]	1.48 (1.49) [53]	3.7, .058 (0.36)	
Hyperactivity/Inattention	B2S	4.27 (2.53) [74]	4.09 (2.47) [65]	3.36 (2.39) [57]	11.7, .001 (0.60)	3.15, .077 (0.23)
	TAU	4.17 (2.49) [78]	3.80 (2.41) [59]	3.92 (2.63) [53]	0.9, .337 (0.18)	
Problems with peers	B2S	3.11 (2.06) [74]	2.18 (1.70) [65]	2.27 (1.90) [57]	17.2, .001 (0.87)	3.52, .063, (0.32)
	TAU	2.76 (1.90) [78]	2.42 (1.73) [59]	2.44 (2.12) [53]	1.7, .199 (0.29)	
Prosocial Behavior	B2S	7.26 (2.28) [74]	7.45 (2.31) [65]	7.60 (2.10) [57]	2.2, .138 (0.27)	0.60, .441 (0.10)
	TAU	7.41 (1.98) [78]	7.47 (2.03) [59]	7.44 (2.02) [53]	0.3, .615 (0.09)	
Impact	B2S	4.93 (3.08) [74]	3.62 (3.30) [65]	2.82 (2.79) [57]	22.6, .001 (1.14)	4.43, .037 (0.36)
	TAU	4.71 (2.92) [78]	3.86 (2.75) [58]	4.02 (3.39) [53]	4.3, .043 (0.49)	
SEQ-SS - Total	B2S	38.73 (9.41) [74]	43.19 (8.64) [53]	43.63 (9.17) [49]	36.4, .001 (1.14)	7.63, .007 (0.46)
	TAU	39.94 (9.14) [78]	40.35 (9.02) [49]	40.79 (9.91) [48]	0.7, .419 (0.19)	
Academic/Social stress	B2S	18.81 (5.12) [74]	21.51 (4.45) [53]	21.81 (4.83) [49]	38.4, .001 (1.17)	7.12, .009 (0.47)
	TAU	19.28 (4.99) [78]	19.82 (5.05) [49]	20.06 (6.13) [48]	1.4, .240 (0.18)	
Separation/Discipline stress	B2S	19.92 (5.75) [74]	21.68 (5.39) [53]	21.76 (5.66) [49]	16.9, .001 (0.78)	4.87, .028 (0.29)
	TAU	20.56 (5.45) [78]	20.53 (5.01) [49]	20.73 (4.95) [48]	0.1, .714 (0.07)	
SEQ-RSAP	B2S	37.23 (6.26) [74]	41.77 (5.81) [65]	43.38 (6.17) [57]	61.7, .001 (1.64)	12.34, .001 (0.53)
	TAU	38.97 (5.62) [78]	40.79 (6.26) [58]	41.31 (5.60) [53]	8.6, .004 (0.63)	

Note: B2S = Back2School, TAU = Treatment As Usual, Pre = Pre assessment, Post = Post assessment, FU = 3 month follow-up, SDQ = Strength and Difficulties Questionnaire, SDQ = Strength and Difficulties Questionnaire – Parent version, SEQ-SS = Self-Efficacy Questionnaire for School Situations, SEQ-RSAP = Self-efficacy Questionnaire for Responding to School Attendance Problems

Table 3. Post hoc analysis of mean change and mean change difference with corresponding confidence intervals (95%).

	Group	Pre-Post		Post-FU	
		Mean change (SD) [valid n]	M. diff. (95%CI)	Mean change (SD) [valid n]	M. diff. (95%CI)
SDQ - Total	B2S	4.37 (4.93) [54]	3.27 (1.46, 5.08)	0.20 (4.68) [45]	-0.31 (-2.16, 1.54)
	TAU	1.10 (4.27) [49]		0.51 (3.71) [39]	
Emotional symptoms	B2S	2.17 (2.60) [54]	1.39 (0.42, 2.36)	0.33 (2.01) [45]	0.05 (-0.74, 0.85)
	TAU	0.78 (2.35) [49]		0.28 (1.59) [39]	
Problems with peers	B2S	0.57 (1.81) [54]	0.66 (0.00, 1.32)	-0.04 (1.45) [45]	0.01 (-0.66, 0.67)
	TAU	-0.08 (1.54) [49]		-0.05 (1.61) [39]	
Impact	B2S	0.80 (3.84) [54]	0.29 (-0.93, 1.50)	0.87 (2.51) [45]	1.48 (0.46, 2.51)
	TAU	0.51 (2.25) [49]		-0.62 (2.17) [39]	
SDQ-P - Total	B2S	3.95 (4.86) [65]	2.04 (0.38, 3.69)	1.00 (4.22) [55]	0.91 (-0.78, 2.60)
	TAU	1.92 (4.41) [59]		0.09 (4.31) [46]	
Emotional symptoms	B2S	2.12 (2.70) [65]	0.97 (0.08, 1.86)	0.31 (1.93) [55]	-0.23 (-1.04, 0.58)
	TAU	1.15 (2.27) [59]		0.54 (2.17) [46]	
Conduct problems	B2S	0.69 (1.38) [65]	0.47 (0.00, 0.94)	0.18 (1.11) [55]	0.09 (-0.35, 0.54)
	TAU	0.22 (1.23) [59]		0.09 (1.13) [46]	
Impact	B2S	1.57 (3.11) [65]	0.91 (-0.15, 1.98)	0.45 (1.82) [55]	0.30 (-0.46, 1.06)
	TAU	0.66 (2.81) [59]		0.16 (2.01) [46]	
SEQ-SS - Total	B2S	5.68 (8.63) [53]	5.11 (1.54, 8.86)	0.45 (6.81) [44]	-0.24 (-3.27, 2.80)
	TAU	0.57 (9.54) [49]		0.69 (7.08) [39]	
Academic/Social stress	B2S	3.36 (4.68) [53]	2.73 (0.81, 4.64)	0.39 (4.20) [44]	-0.13 (-1.90, 1.64)
	TAU	0.63 (5.06) [49]		0.51 (3.87) [39]	
Separation/Discipline stress	B2S	2.32 (5.17) [53]	2.38 (0.30, 4.46)	0.07 (3.71) [44]	-0.11 (-1.85, 1.63)
	TAU	-0.06 (5.40) [49]		0.18 (4.25) [39]	
SEQ-RSAP	B2S	4.74 (6.40) [65]	2.86 (0.71, 5.01)	1.04 (4.73) [55]	0.46 (-1.48, 2.40)
	TAU	1.88 (5.55) [58]		0.58 (5.02) [45]	

Note: B2S = Back2School, TAU = Treatment As Usual, Pre = Pre assessment, Post = Post assessment, FU = 3 month follow-up, SDQ = Strength and Difficulties Questionnaire, SDQ = Strength and Difficulties Questionnaire – Parent version, SEQ-SS = Self-Efficacy Questionnaire for School Situations, SEQ-RSAP = Self-efficacy Questionnaire for Responding to School Attendance Problems, M. diff (95%CI) = Mean change difference with 95% confidence difference.

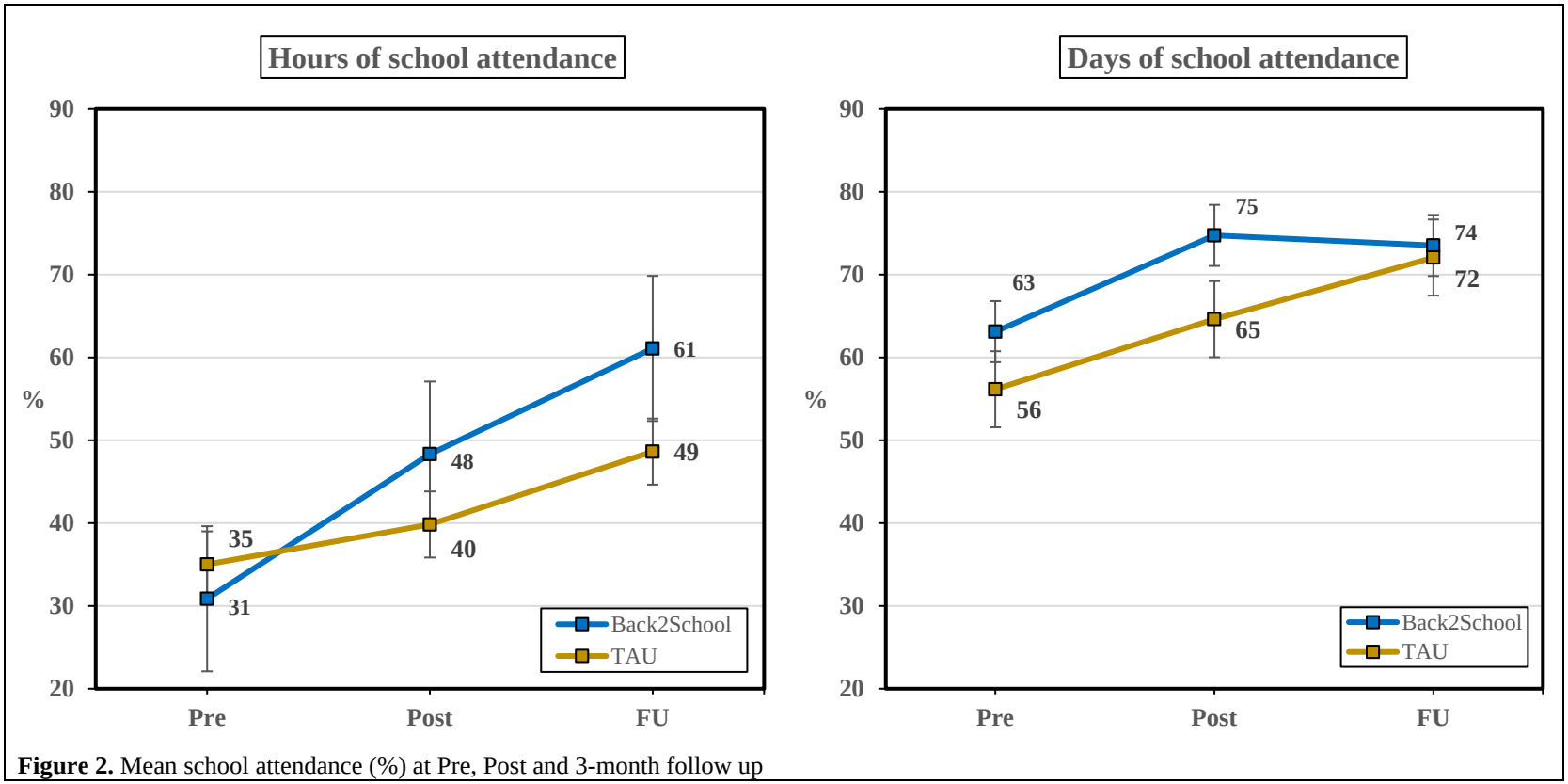

Figure 2. Mean school attendance (%) at Pre, Post and 3-month follow up

Appendix 1. Descriptive information regarding the interventions received in the treatment as usual (TAU) group

	TAU (*n* = 60)	
	***n* (%)**	**Mean hours (SD)**
Received any intervention:	60 (100)	13.4 (21.6)
Number of service providers (i.e., school, municipal, region, or private):		-
One provider	10 (16.7)	-
Two different providers	23 (38.3)	-
Three different providers	24 (40.0)	-
Four different providers	3 (5.0)	-
Public services:	59 (98.3)	11 (22.0)
School services:	56 (93.3)	6.8 (18.6)
School meeting	55 (91.7)	-
Home schooling	8 (13.3)	-
Special education	2 (3.3)	-
Reduced school schedule	1 (1.7)	-
Municipal services:	41 (68.3)	6.4 (14.9)
Meeting with social worker	21 (35.0)	-
Interventions provided by school psychologist	13 (21.7)	-
Interventions provided by clinical psychologist	7 (11.7)	-
Mentoring program	7 (11.7)	-
Meeting with an official from the municipality	5 (8.3)	-
Enrollment or support from a youth center	5 (8.3)	-
Multisystemic Therapy	2 (3.3)	-
Regional services:	24 (40)	3.3 (2.3)
Psychiatric hospital (assessment or inpatient care)	16 (26.7)	-
Hospital / MD practitioner	13 (21.7)	-
Center for suicide prevention	1 (1.7)	-
Private services:	19 (31.7)	8.5 (8.4)
Private psychologist	14 (21.7)	5.8 (5.6)
Other private interventions:	5 (8.3)	8.5 (9.0)
Physiotherapy	1 (1.7)	-
Hypnotherapy	1 (1.7)	-
Private tutoring	1 (1.7)	-
Post adoption services	1 (1.7)	-
Cancer survivor support	1 (1.7)	-

Note: The information is derived from a semi-structured interview conducted among parents in the TAU group, assessing the interventions received from pre to post.

Appendix E

Co-author declarations

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Declaration of co-authorship

This declaration concerns the article: Lomholt, J. J., Johnsen, D. B., Silverman, W. K., Heyne, D., Jeppesen, P., & Thastum, M. (2020). Feasibility Study of Back2School, a Modular Cognitive Behavioral Intervention for Youth With School Attendance Problems. Frontiers in Psychology, 11(April), 1–15.

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As second author, Daniel Bach Johnsen has made the following contribution:

A. Minor contribution
B. Medium contribution
C. Major contribution

Declaration regarding specific elements (1.-4.)	**Extent (A, B, C)**
1. Conception and design of the study	B
2. Collection and assembly of data	B
3. Data analysis s and interpretation	C
4. Manuscript writing	C

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B. Medium contribution
C. Major contribution

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1. Conception and design of the study	C
2. Collection and assembly of data	C
3. Data analysis s and interpretation	C
4. Manuscript writing	C

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This declaration concerns the article: Thastum, M., Johnsen, D. B., Silverman, W. K., Jeppesen, P., Heyne, D., & Lomholt, J. J. (2019). The Back2School modular cognitive behavioral intervention for youths with problematic school absenteeism : study protocol for a randomized controlled trial, 1–12. Trials.

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1. Conception and design of the study	C
2. Collection and assembly of data	C
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